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A LONGITUDINAL ANALYSIS OF INTENTIONS
TO ENLIST: IMPACT ON SUBSEQUENT ENLISTMENTS
AND PERFORMANCE OF U. S. MARINES

by

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19. ABSTRACT

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A LONGITUDINAL ANALYSIS OF INTENTIONS TO ENLIST:
IMPACT ON SUBSEQUENT ENLISTMENTS
AND PERFORMANCE OF U. S. MARINES

by

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ABSTRACT

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TABLE OF CONTENTS

I.	INTRODUCTION -----	1
A.	BACKGROUND -----	1
B.	OBJECTIVES -----	3
C.	RESEARCH QUESTIONS -----	4
D.	SCOPE -----	4
E.	ORGANIZATION OF STUDY -----	5
II.	A REVIEW OF SELECTED LITERATURE -----	6
III.	ANALYSIS OF CURRENT ENLISTMENT MODEL (U.S. MARINE CORPS) -----	25
A.	OBJECTIVE -----	25
B.	CURRENT MODEL -----	25
C.	MODEL COMPONENTS -----	29
	1. Qualified Military Available -----	29
	2. Propensity Factor -----	30
	3. Summary -----	34
IV.	PRESENTATION OF DATA -----	36
A.	DATA -----	36
B.	METHODOLOGY -----	41
C.	RESULTS -----	45
D.	INTERPRETATION OF RESULTS -----	45
	1. Survey Data -----	45
	2. Accession Data -----	49

V.	CONCLUSIONS AND RECOMMENDATIONS -----	75
A.	CONCLUSIONS -----	75
1.	From the Analysis -----	75
2.	General -----	76
B.	RECOMMENDATIONS -----	78
	APPENDIX -----	80
	LIST OF REFERENCES -----	91
	INITIAL DISTRIBUTION LIST -----	93

I. INTRODUCTION

A. BACKGROUND

Adoption of an All-Volunteer Force concept in 1973, coupled with increased public awareness of escalating manpower costs, has prompted the adoption of a vastly different outlook on manpower resource utilization matters [Ref. 1]. Traditionally, the primary pool of military manpower has been young men between the ages of 17 and 21. The size of this pool has been on the decline since 1982, and this trend is expected to continue through the mid-1990s. This has made recruiting much more difficult. Changes in the economy have put the military at a competitive disadvantage with civilian employers. Rapidly increasing civilian wage rates make it more difficult for the military to attract quality youth, and pressures to tighten the national budget tend to promote an even more unfavorable civilian-to-military pay ratio.

Policymakers need information that will enable them to respond to demographic and economic changes with effective allocations of recruiting resources. Current research efforts sponsored by the Marine Corps reflect increased emphasis on accurate Qualified Military Available (QMA) market information. The primary reasons for concern are two-fold: (1) a more accurately defined market enhances

cost-effective recruitment success overall; and (2) increased interest in fair allocations of recruitment quotas, providing all recruiters an equal opportunity to meet productivity goals.

Since 1985, the Marine Corps has used estimates of the QMA market and a "propensity index" in establishing annual recruitment quotas. The general opinion among those more directly involved in the recruiting effort is that the QMA estimates seem relatively accurate, but there is little understanding of how propensity is determined. The propensity measure has several components, the most important of which is the YATS index. Research to date indicates that YATS is a dynamic component with limitations yet unknown.

The primary concern about the reliability of the propensity measure in the Marine Corps is in its capacity for making accurate distinction between propensity at local levels (e.g., county, recruitment station, etc.). This is understandable since propensity will tend to vary from one geographic area to another, and the inherent problem of small sample size exacerbates the problem. A problem of this magnitude will likely require a major research effort before it is adequately resolved.

However, it may be useful at this time to look at the propensity measure itself for a better understanding of how it relates to actual enlistment. There may be some

characteristics of this element that are not yet understood, and improving our understanding might yield excellent short-term benefit until the larger problem is remedied. Such an approach might also pave the way for new ideas for future research in this area.

B. OBJECTIVES

Considerable research has been undertaken to develop models for predicting the available manpower supply for U.S. military enlistment. There is, however, a paucity of research that focuses on the impact of intentions on the subsequent enlistment decision. Several of the more popular econometric models of manpower supply use intentions as a "proxy" for omitted variables and regional "taste" differences (e.g., pro-military, anti-military). In general, a proxy variable is a "good" proxy when its movements correspond relatively well to movements in the theoretically correct variable. The United States Marine Corps presently employs a model for determining national recruitment quotas and the distribution of said quotas among Marine Corps Recruiting Districts, which includes an intention variable. There has been much concern expressed with regard to just how adequately "taste" differences are meaningfully measured and how accurate they are for predicting the probability of enlistments. This thesis will consist of an analysis of "propensity" and its relation to military enlistments and subsequent performance. The

effectiveness of the analysis will be enhanced by including all services, with emphasis on the Marine Corps wherever possible.

C. RESEARCH QUESTIONS

The primary research question of this thesis is as follows: To what degree does an individual's intention to join the military, as stated in the Youth Attitude Tracking Study (YATS), accurately reflect the ultimate decision to enlist or not enlist? In addition, given that actual enlistees consist of individuals who had both positive and negative intentions to join at the time of the survey, is there any significant difference in military performance or behavior of those with positive or negative initial intentions? For example, is there any evidence of greater quality differences among individuals with either initially negative or positive intentions and, if such differences emerge, what are the policy implications of such findings?

D. SCOPE

This thesis will specifically examine the following issues: (1) the essential details of a framework for predicting the military enlistment supply; (2) the use of the YATS in enlistment supply research; (3) the Marine Corps' present model for determining recruitment quotas; (4) an analysis of YATS responses from Spring 1976 through Fall 1983 with respect to intentions toward enlisting in the

military, and the relationship between demographic characteristics and initial intention among survey respondents who actually enlisted by Fall 1987; and (5) interpret the empirical results and discuss the policy implications.

The assumptions of this thesis are: (1) the 1976 through 1983 YATS responses are reasonably representative of the total primary military-eligible population (e.g., 17-21 year-old men); and (2) there are sufficient numbers of women to meet current military requirements.

E. ORGANIZATION OF STUDY

Chapter II presents a review of current literature that addresses the military manpower enlistment supply issue. Chapter III analyzes the current model employed by the Marine Corps to determine recruitment quotas and the subsequent distribution of quotas across recruiting districts. Chapter IV describes the data, outlines the methodology, and presents the analytical results, followed by an interpretation of the results. Chapter V contains the conclusions and recommendations resulting from the analysis.

II. A REVIEW OF SELECTED LITERATURE

This study attempts to answer the following questions: What is the relationship between the self-stated intentions of young people to join the military (as gathered in nationwide surveys) and their actual enlistment behavior? Can data on enlistment intentions be used to accurately predict the quantity and quality of future accessions? More specifically, the study is interested in how the U.S. Marine Corps might benefit from: (1) current research on the military enlistment intentions of teenagers; (2) better information on the capabilities and limitations of data concerning enlistment intentions; and (3) knowledge of the potential use of intention data in formulating future recruitment policies. The thesis begins by reviewing the relevant literature on intentions.

Borack (1984) set out to analyze principal methods in personnel supply research and to suggest a prospectus for combining them into a logical framework [Ref. 2]. Three distinct methods were analyzed, each pertinent to the "supply" issue: (1) econometric models, (2) surveys of interest/intention to join the military, and (3) demographic analyses.

The econometric model is the most widely used technique for predicting or estimating military personnel supply.

Such models usually estimate the number of contracts signed by "high quality" young males based upon aggregate variables associated with the enlistment decision. "These models," according to Borack, "typically use standard econometric regression-based techniques and tend to be either time-series, cross-sectional or pooled time-series, cross-sectional in nature." [Ref. 2:p. 4] Econometric supply models can be useful; but, when using these models to forecast, certain assumptions have to be made. To the extent that a particular variable (e.g., recruiters) can be controlled, this is not a big problem. However, the standard error for variables over which there is no control (e.g., unemployment, population measures) is likely to be larger than desired.

Table 1, from Borack, presents a summary of the more prominent econometric models developed for studying young male enlistments [Ref. 2]. It should be noted that the inclusion of an intention measure in these models has not been an especially popular choice. The model by Siegel and Borack was one of only three models that included the YATS propensity measure as an explanatory variable.

As Borack writes:

Interpretation of estimates and predictions derived from econometric models must be viewed with extreme caution. Aside from standard econometric problems relating to specification of functional form and choice of appropriate statistical estimation technique, econometric supply models bear additional scrutiny. One key issue is the definition of supply itself for, in fact, the observed value

TABLE 1
SUMMARY OF ECONOMETRIC MODELS

<u>AUTHOR</u>	<u>SERVICE</u>	<u>DEPENDENT VARIABLES</u>	<u>EXPLANATORY VARIABLES</u>
Hanssels, & Levien (1983)	N	Leads, delayed entry pool (DEPS) direct shipment contract/17-21 male population	(Civilian earnings, UNR, % black, GI bill, % urban, % HS seniors, YATS propensity, recruiters, recruit- ing \$, direct ship- ment goal, Dep (-1)/ 17-21 male population
Huck & Allen (1978)	D	Total HSDG I- IIIa, white HSDG I-IIIa, nonwhite HSDG I-IIIa contracts	Civilian mfg pay, UNR, recruiters, OMAs (17-21 male HSDG I- IIIa, not in college)
Jehn & Shughart (1976)	N	(Total con- tracts HSDG I- IIIa contracts)/ 17/21 male population	UNR, per capita income, % black, % urban, median years of education, % mfg workers, % net migra- tion (1960-70), recruiters, male enlistment quota
Morey (1980)	N	Total HSDG, HSDG I-IIIa contracts, leads	RMC/civ pay, UNR, youth UNR % urban, DEP, YATS propensity, recruiters, minority and overall recruit- ing \$, advertising \$, HS seniors, % black
Morey & McCann (1980)	N	(Total contracts, HSDG contracts, leads)/labor force	(Unemployed popula- tion, leads, adver- tising \$, recruiters, HS seniors, dependent variable (-1)/labor force

Note: D = all services; A = Army; N = Navy;
MC = Marine Corps; AF = Air Force

TABLE 1 (CONTINUED)

SUMMARY OF ECONOMETRIC MODELS

AUTHOR	SERVICE	DEPENDENT VARIABLES	EXPLANATORY VARIABLES
Siegal & Borack	N	Total HSDG con- tracts/HSDA male population	Civ/basic military pay, (UNR recruiters (weighted), HSDG accession goal)/HSDG male population, YATS employment prospects, YATS propensity
Van Doren (1981)	N	(Total HSDG, HSDG I-II con- tracts)/17-21 male population	18-year-old male earnings/RMC, UNR, 17-21 male popula- tion, recruiters/ 17-21 male population
Fernandez (1979)	D	(Total HSDG, HS- DG I-II, HSDG IIIa HSDG IIIb contracts)/17-21 population	RMC/civ earnings, lagged youth URN, recruiters, minimum wage
Goldberg	D	Total HSDG, HSDG I-IIIa, HSDG I-II contracts	RMC/civ pay, UNR, (youth job program \$, countercyclical job program \$, blacks)/ 17-21 male population Navy, Army, USMC, USAF recruiters
Goldberg & Greenston	D	HSDG I-IIIa con- tracts, HSDG IIIb contracts	RMC/civ earnings, change in UNR, avg URN, 17-21 male polu- lation, % black males, % urban popu- lation of 17-21 males, Navy, Army, USMC, USAF recruiters
Greenston & Toikka (1978)	N	HSDG I-II, HSDG III, HSDG IV, NHSDG I-II, NHSDG III, NHSDG IV contracts	Male youth UNR (-1), military pay (-2)/ real 18-21 male civ pay (-1), 17-21 male population, quota/ total contracts

TABLE 1 (CONTINUED)

SUMMARY OF ECONOMETRIC MODELS

AUTHOR	SERVICE	DEPENDENT VARIABLES	EXPLANATORY VARIABLES
Grissmer (1977)	D	(HSDG I-II, HSDG III, NHSDG I-III, total I-III, black HSDG I-III, nonblack HSDG I- III, nonblack HSDG I-III con- tracts)/17-21 male population	Mil/civ pay, youth UNR
Grissmer, et al. (1974)	D	(Total age 17-18, total age 19-21, AFQT I-II, AFQT I-III, total HSDG, total NHSDG, black NHSDG contracts)/ QMAs	MIL/civ wage, youth UNR, recruiters/AMAs, male HSDGS/male college enrollments, military residents/ population, bonds advertising \$
Amey, al. (1976)	A, N	(HSDG I-II, HSDG III, total I-III, NHSDG I-III con- tracts)/17-21 male QMAs	RMC/civ income for et 17-21 males, youth UNR, advertising \$, recruiters/QMAs, % black QMAs
Ash, et al. (1983)	D	(Total contracts, total accessions, white accessions, nonwhite acces- sions)/18-19 year old male population	Civ/MIL pay (-1), youth unemployment rate (UNR), induction probability
Brown (1983)	A	(Total contracts, AFQT I-IIIa, 18- 20 population, high school diploma gradu- ates (HSDG) con- tracts, HSDG I- IIIa)/HS graduates	RMC, VEAP/RMC, civ wage, UNR, UNR- squared, (recruiters, national/local adver- tising)/ 18-20 population

TABLE 1 (CONTINUED)

SUMMARY OF ECONOMETRIC MODELS

<u>AUTHOR</u>	<u>SERVICE</u>	<u>DEPENDENT VARIABLES</u>	<u>EXPLANATORY VARIABLES</u>
Cotterman (1983)	D	HSDG I-IIIa con- tracts/17-21 male population	RMC/civ earnings, state UNR-US UNR deviation, recruiters/17-21 male population
Cowin, et.al (1980)	N	(AFQT I-IIIa, AFQT IIIb-IVa, HSDG, non-HSDG contracts)/17- 21 male popula- tion, females, nonwhite school- eligible contracts	URN, UNR (-6mos), % employed, civ wage, expected civ wage, change in civ wage, recruiters/17-21 male population, % military population
Dale & Gilroy (1983)	D	(Total HSDG con- tracts, white & black HSDG con- tracts)/16-19 male population	RMC/civ pay (+4), UNR, UNR (-2) (all for 16-19 males), GI bill/CPI, VEAP, bonus
DeVaney & Saving (1982)	AF	(AFQT I-II con- tracts, AFQT III-IV con- tracts)/16-19 male population	Mil/civ wage, employ- ment rate, USAF recruiters/DOD recruiters, induc- tions/16-19 male population
Donelan (1977)	N	Age 17-21 AFQT I-II accessions	UNR, % urban QMA, % rural QMA, recruiters (weighted)

Note: D = all services; A = Army; N = Navy;
MC = Marine Corps; AF = Air Force

Source: Borack [Ref. 2]

of high-quality contracts/accessions is, in many instances, the intersection of supply and demand -- not exclusively supply. [Ref. 2:p. 9]

It does not take an expert to recognize that the number of recruits is largely a function of the interaction of the marketplace and the recruiting effort.

Borack points out that econometric models are also subject to other shortcomings:

Parameters of regression models are measures of association, not causality; inability to incorporate variables that are not readily quantifiable; and they cannot be readily developed for demand-constrained or nontraditional sources of military supply. These short-comings aside, econometric models provide a useful tool for forecasting high quality accessions/contracts and, when used carefully, represent a constructive approach for addressing policy issues through relevant independent variables. [Ref. 2:p. 9]

Most manpower analysts, regardless of their particular slant on methodology, will agree that surveys are an excellent tool in predicting potential recruitment supply. The "Youth Attitude Tracking Study" (YATS) is considered by most experts to be the most important ongoing survey involving Americans of primary military enlistment age. It is administered by telephone interview annually (semi-annually prior to 1981) to a representative national sample of approximately 10,000 young men from 16 to 21 years of age, and to a smaller sample of approximately 2,000 young women. The YATS data are gathered cross-sectionally and consist of responses to a broad spectrum of questions aimed at determining enlistment propensity and service preference, reasons for lack of interest, awareness and effects of

financial incentives, recruiter contacts, future plans, demographics, and the like. The key barometer of intent to serve in the military (or the individual services) is obtained by asking respondents a series of select questions with rated responses.¹

Supply, as typically defined by the military market research survey, relates to the number and composition of individuals who are interested in a military work experience. As Borack observes, "While the intent to join the military may be a dubious supply proxy, surveys are quite useful in measuring the relative size of a supply pool; that is, they are of enormous value in gauging market size segmented by demographic factors, geographic location, etc." [Ref. 2:p. 14] To some extent, surveys allow researchers to estimate the impact of factors not readily measurable through econometric models. The most important contribution of surveys is that they allow manpower researchers to investigate the entire spectrum of the youth market, those who elect military service as well as those who do not.

Demographic techniques are frequently used to estimate and project military manpower supply. Such demographic data are quite useful in assessing the number and mix of individuals "qualified and available" for military service.

¹A detailed discussion of the YATS propensity measure is presented later in this chapter.

Within this context, the term "qualified" refers to the ability of a candidate to meet the physical/medical, mental aptitude, level of education, and moral character standards as set forth by the military. [Ref. 2:p. 15] Youth "availability" for military service relates to a combination of attitudes and behavior -- with college-going youths and persons in institutions generally considered "unavailable" for enlistment -- and may vary in definition from one analyst to another.

In investigating demographic supply, a suitable base population must first be established. Since the preponderance of enlisted accessions are young men, the most commonly referred to base is the group of 17-21 year-old males with an additional reference to educational status, namely high school senior or high school graduate.² Demographic data typically result from projections using the most current U. S. Bureau of the Census population estimates. Following the selection of the base population, demographic analyses remove from this population those who are unqualified for military service in accordance with the aforementioned criteria.

Borack concluded that, although each of the three techniques for studying and defining military manpower supply -- econometrics, surveys, and demographic studies --

²Completion of the first-term of service has been found to be strongly correlated with possession of a high school diploma.

contributes invaluablely to understanding the supply concept, "no single technique appears to provide all of the information needed to establish and maintain an efficient recruitment program." "A method is needed," he concluded, "for integrating the best of these methods into a comprehensive supply framework." [Ref. 2:p. 20]

The framework presented by Borack represents a very logical and thorough approach to assessing the enlistment supply. However, the table of econometric models indicates that there has thus far been very limited use of surveyed intentions in military manpower supply estimates of this type. At the same time, the table suggests that there is a relative consensus where other explanatory variables (e.g., military/civilian pay ratio, race, unemployment rate, etc.) are concerned.

One analyst has examined the intentions component of the YATS and found that there is a strong relationship between responses to the YATS and individuals' subsequent decision to enlist [Ref. 2]. Orvis is currently the most distinguished researcher on the development of the YATS propensity measure as a tool for forecasting future enlistments. His published research dates back to 1982 when he undertook a study with the following objectives: (1) analyze the enlistment actions of survey samples; (2) investigate the validity of enlistment intention measures; and (3) improve the accuracy of intention analyses.

The intention analysis was begun with the general enlistment intention question, "How likely is it that you will be serving in the military in the next few years?" The individual was requested to give a rated response consistent with one of four choices: definitely will serve, probably will serve, probably will not serve, and definitely will not serve. These responses were deemed measures of an individual's strength of intention. A very small percentage of those surveyed, approximately 3 percent, responded "don't know" to the general intention question, which qualified as a valid response. The results were grouped into three categories: 1. definitely; 2. probably; and 3. probably not, definitely not, and don't know. Categories 1 and 2 were both considered "positive" propensity, while category 3 was termed "negative" propensity.

Table 2 [Ref. 3] depicts the results of the intention analysis in a manner that was felt to have the greatest statistical value. The data consist of combined YATS surveys, Spring 1976 through Spring 1978, and a follow-up period (over which to observe enlistments) through December 1981.

In YATS analyses prior to the 1982 work of Orvis, the measure used to determine overall enlistment propensity differed somewhat from the one described above. The question of interest then was, "How likely are you to join a

TABLE 2
**YOUTH POPULATION ENLISTMENT
 RATES BY INTENTION**
 COMBINED YATS SURVEYS, SPRING 1976-
 SPRING 1978

Enlistment intention in survey ^a	Percent enlisting by December 1981	
	General measure	4-service measure
Definitely will serve	33 (.03)	29 (.06)
Probably will serve	17 (.24)	14 (.29)
Negative propensity	5 (.73)	5 (.65)

^aThe percentage of the sample classified at each intention level by each measure is shown in parentheses.

Source: Orvis [Ref. 3]

specific service (e.g., Army, Navy, Marine Corps, Air Force)?" The possible answers corresponded to those used by Orvis and the most favorable response toward any one of the four services determined the intention level. For example, a "definitely will serve" response of any type resulted in being classified as having a positive propensity for military service.

Table 2 also reveals quite similar propensity level percentages using the two different measures. Note that each cell contains two numbers. The top number is the percent of the particular group that enlisted, while the

sample represented by the particular group. As Orvis observes here:

The results for the four-service combined measure differ in two respects from those for the general measure. First, the enlistment rates for the positive propensity groups on the simpler, general measure are several percentage points higher than those found on the four-service measure. The second and larger difference between the two measures concerns the size of the group classified at each intention level. For example, twice as many persons are classified in the "definitely will serve" group by the four-service measure as by the general measure. [Ref. 3:p. 26]

In response to both the high degree of similarity between propensity results using different measures and his interpretation of the two major differences in the results as noted above, Orvis devised a new grouping order for the propensity measure. He felt that, "although the general intention measure did a nice job of tracking the actual enlistment rates of the respondents, other intention measures in the YATS survey make it possible to further discriminate among different propensity groups." [Ref 3:p. 30] The new intention variable is a composite intention variable with four categories:

- Unaided mention and definite intention;
- Unaided mention and probable intention;
- No unaided mention, definite or probable intention; and
- Negative propensity.

Groups 1 and 2, compose the positive propensity results from the general intention measure. Group 3 is considered the positive propensity indicator on the four-service

measure. And, group 4 is defined as the negative propensity results from both the general and four-service measures.

Figure 1 shows that almost 50 percent of those who responded with unaided mention of plans for military service and had a definite intention to serve actually enlisted within 42 months of the survey period. Furthermore, Orvis noted that the predictive power of the intention measure tends to be greatest within the first 12 to 18 months following the survey, as denoted by the steeper slope during the initial period covered. Also, it is quite interesting to observe from the relative steepness of the

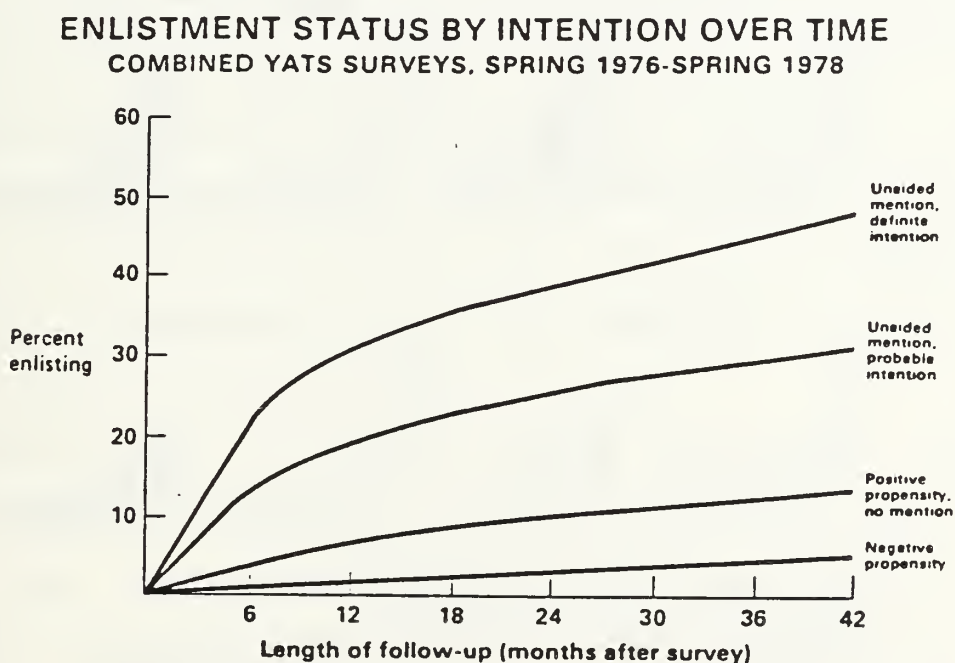


Figure 1

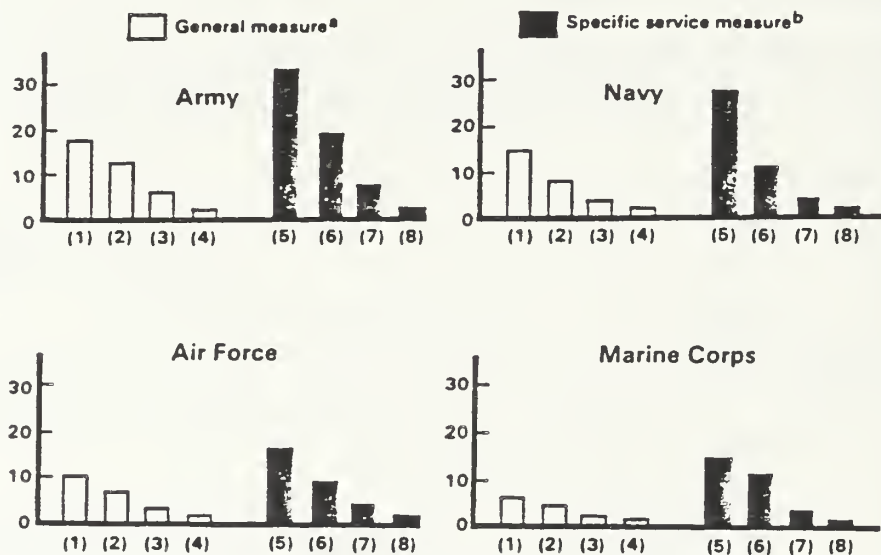
Source: Orvis [Ref. 3]

slopes throughout the period that the intention measures

slopes throughout the period that the intention measures continue to distinguish persons on the basis of difference in likelihood of enlisting. [Ref 3:p. 35]

Figure 2 demonstrates, through a series of graphs, the data results and the relationship between responses to the general measure and the specific measure as each pertains to actual enlistments by service.

PREDICTING SPECIFIC SERVICE ENLISTMENTS PERCENT ENLISTING IN SPECIFIC SERVICES



^aThe intention categories are (1) unaided mention, definite intention; (2) unaided mention, probable intention; (3) positive propensity, no mention; (4) negative propensity. Intention is intention to serve in the military.

^bCategories (5)-(8) are defined similarly to categories (1)-(4); the question assessing intention to serve in the military is replaced by the question assessing intention to serve in the specified service.

Figure 2

Source: Orvis [Ref. 3]

According to Orvis, the data support several conclusions:

First, based on the YATS, enlistment decisions in national youth samples appear to be made over a period of several years. Second, there is a great deal of evidence that enlistment intention results predict the eventual enlistment actions of the survey respondents. Finally, different intention measures have different uses. Specific service intention measures predict enlistments in the specific services more accurately than does a general intention measure. On the other hand, overall or general enlistment propensity is better tracked by a simple overall measure than by a measure that combines results concerning intentions to enlist in each of the individual services. [Ref. 3]

Bachman, Sigelman, and Diamond [Ref. 3] researched the relationship between military service and promilitary values. Several preceding research efforts had resulted in differing conclusions as to the effect of military service on an individual's promilitary values. These differences aside, the authors concede that there is a relationship between military service and promilitary values, and investigate "why" the connection exists.

There are two widely accepted explanations for the association between military service and promilitary values. The first focuses on the notion that the socialization process of active duty service in the military results in certain types of attitudes and orientations. The second explanation takes the position that the self-selection process is the prevailing force here. The feeling is that promilitary values among military personnel are to a great

extent attributable to the fact that persons with such values are more likely to enter the military than others.

Prior research and analyses involved samples composed of individuals already in the military in some capacity and their civilian counterparts. Bachman, Sigelman, and Diamond deviated from convention and compared a group composed entirely of those who had not yet served on the basis of future intentions "to serve" or "to not serve." The data were obtained from an ongoing study of high school seniors conducted by the Institute for Social Research called Monitoring the Future [Ref. 4:p. 171]. The study is designed to survey a nationally representative sample of each high school senior class, beginning in 1975, with a follow-up survey mailed annually to a subset of each class sample.

The methodology employed by Bachman, Sigelman, and Diamond was designed to statistically analyze from the survey responses the relationship between military service plans and attitudes toward the military. The military service plans variable was a measure derived from a list of rated responses 1 through 8, with 1 representing the most unfavorable intention to serve and 8 the most favorable. Eight variables were used to capture military attitudes and each was evaluated with respect to military service plans.

Combined data from surveys of seniors in the ten graduating classes of 1976 through 1985 were used in the analysis and the results were as follows:

- It is clear that those who plan military careers are more promilitary than those who do not expect to serve at all. With each higher level of commitment to service, there are correspondingly more positive views of military job opportunities and fair treatment, greater desires for increased military spending and influence, more support for military intervention and supremacy, and greater endorsement of unquestioning military obedience.
- It is evident that differences in military attitudes are linked to both aspects of military plans, rather than just to career expectations. Though career distinctions are important, those who expect to enlist but do not anticipate military careers are still distinctly more promilitary than those who do not expect to serve at all.

In summary, the literature reviewed suggests that substantial gains may be realized by including an enlistment intention variable in models for forecasting manpower supply. However, as Borack [Ref. 2] points out, manpower researchers have omitted from manpower supply models a variable that reflects individuals' attitudes toward enlisting in the military. Borack then presents a prospectus on the subject that advocates the inclusion of an intention measure. Orvis [Ref. 3] demonstrates some of the potential for predicting future enlistments using YATS propensity measures. His analyses indicate a strong relationship between intention to enlist and the ultimate decision to enlist. Additionally, YATS provides a database

tailored to the task of analyzing differences in demographic characteristics of individuals against a multitude of perception variables. Bachman, Sigelman, and Diamond [Ref. 4] demonstrate the usefulness of data concerning intentions to serve in the military in yet another light. The results of their study suggest that promilitary attitudes exist to some degree among most people at a level corresponding to how favorably they view military service. And there are strong indications that the potential for recruiting individuals who have less favorable intentions toward military service is great, given the proper incentives. These selected studies, representative of other works in this area, demonstrate that propensity measures can be used to predict an individual's future enlistment behavior, and that there is also a potential for making military service an appealing alternative for persons who do not initially demonstrate a strong intention to join.

III. ANALYSIS OF CURRENT ENLISTMENT MODEL (U.S. MARINE CORPS)

A. OBJECTIVE

As noted in Chapter II, a "good" forecasting model can be considered one that encompasses attributes of each of three methods used in personnel supply research: econometric models, surveys of interest/intentions, and demographic analyses. Borack is one of the principal proponents of this approach, and his criteria will be applied in evaluating the enlistment model currently used by the Marine Corps.

The objective will be to evaluate the Marine Corps model in terms of its accuracy in predicting the Qualified Military Available (QMA) market and fairness in allocation of recruitment quotas among districts. This will be achieved by analyzing each component of the model from an empirical standpoint and by investigating alternatives.

B. CURRENT MODEL

Currently, the Marine Corps uses the following model for the purpose of establishing a "fairshare quota distribution." [Ref. 5]

$$\begin{aligned} &(\% \text{ OF SPECIAL MARKET}) * (\text{PROPENSITY INDEX}) = \\ &\quad (\% \text{ OF THE INTERESTED MARKET}) = \\ &\quad \quad (\% \text{ OF NATIONAL QUOTA}) = \\ &\quad \quad (\% \text{ OF RECRUITER DISTRIBUTION}) \end{aligned}$$

% OF SPECIAL MARKET -- actually a subset of QMA (defined below), composed of 63% of I-IIIa's, 36% of I-IIIb's and 1% of I-IV's

PROPENSITY INDEX -- described below

The QMA is estimated through a process of elimination. Its population consists of individuals who would be expected to meet the Marine Corps' education and aptitude requirements and pass a physical examination. Using all 17-21 year-olds as a base, an estimate is made of the proportion that are high school graduates (including those with GED certificates). The non-graduates are then subtracted from the base. From this "educationally qualified" base, an estimated number of low-aptitude individuals are removed. The remaining sub-population is then divided into groups representing aptitude ranges or categories. Finally, a constant proportion of each group, representing the physically disqualified, is removed. The remaining population is the QMA.

The QMA statistic was initially developed by Binkin and Johnston for a 1973 report to Congress on the status of the all-volunteer military. The QMA estimate, as originally calculated, excluded those who could not volunteer (e.g., institutionalized persons, those who were unqualified, and those already in military service) as well as persons who were not likely to volunteer (e.g., full-time college students and veterans). The latter group, those not likely

to enlist, helped to define an individual's presumed "availability" for voluntary service. [Ref. 6]

There are assorted approaches to calculating an individual's "availability" for military service. There are also some analysts who say that everyone in the relevant population should be considered recruitable, as Eitelberg points out; "virtually anyone can be attracted to military life under the right circumstances." [Ref. 7] Because there is no consensus on the subject of "availability" and no clearcut method for estimating an individual's likelihood of enlistment, the "A" portion of the QMA statistic is often omitted.

The Marine Corps model attempts to estimate an individual's likelihood of enlistment by using a "propensity factor." The Propensity Factor is a weighted factor which is an estimate of the tendency of 17-21 year-olds in given geographic areas to enlist in the Marine Corps. This Propensity Factor is measured with four variables:

- YATS -- The YATS index is based on the response to a single question from an annual survey conducted by Defense Manpower Data Center (DMDC), which surveys individuals' desire to serve in the Marine Corps.
- Priority Prospect Card (PPC) Return Rate -- A postage-paid, tear-off card is included in Marine Corps recruitment literature and an individual who returns the card and passes a validity screening process is considered a quality lead or prospect. The PPC Index is derived by measuring the number of quality leads generated by the PPC's compared to the total volume of direct mailing.

- Unemployment Index -- The Unemployment Index utilizes statewide unemployment rates as compiled by the U. S. Department of Labor.
- Productivity Index -- The Productivity Index uses the number of net new contracts for a District as compared to the Table of Organization (T/O) of recruiters.

These indices are applied equally against the QMA figures to allocate the quotas by district. Three-year averages for each index are used to account for developing trends and to prevent shifts in quota based on errors or temporary shifts in attitude.

C. MODEL COMPONENTS

1. Qualified Military Available

QMA estimates are calculated and updated annually by the Navy Personnel Research and Development Center (NPRDC). As stated previously, a "special market" concept is applied to QMA, further breaking it down into percentages of three AFQT categories. This is an interesting concept, but no explanation is given as to its origin. The YATS II Report (Fall 1986) does note that, in predicting AFQT categories from YATS data, 63 percent of accessions representing individuals with negative and positive propensity would be in AFQT Category I-IIIA [Ref. 7:pp. 1-15]. In developing the QMA, counties were clustered into a few groups based on empirically determined factors that correlate with AFQT score. The AFQT distribution of all

members of specific racial groups residing in each county in each cluster was assumed to be the same. [Ref. 9]

The procedure used to estimate QMA seems reasonable. However, initial studies suggest that the procedure may tend to overestimate the ability level in low-ability counties and underestimate the ability level in high-ability counties [Ref. 10]. This probably occurs because the profile sample sizes used were limited and valuable county-level data (e.g., educational attainment statistics for the racial/ethnic sub-populations in small counties) were unavailable. These limitations kept the researchers from recommending QMA estimates for individual counties. As Borack [Ref. 9:p. 15] also states, "conversely, the aggregate estimates -- for the nation and by the recruiting district and station -- are recommended for use in identifying trends in the overall size of the QMA and its geographic and ethnic distributions."

The following observations concerning QMA were noted by NPRDC in a recent study of QMA estimates at the county level:

- Maintaining accurate QMA estimates depends on acquiring data that capture shifts in the demographic attributes of counties. For example, the data must pick up changes in racial/ethnic mix, high school graduation rates, and aptitude distributions.
- Current QMA estimation methodology relies heavily upon the 1980 census and subsequent Bureau of Census projections. No projections of Hispanics at the county level, or even at the state level, were available.

- No careful tracking of high school graduation rates for the racial/ethnic sub-populations has been conducted at the county level, nor has any projections of the rates been attempted.
- Evidence from at least one county (Los Angeles, Ca.) suggests that the shift in the racial/ethnic distribution of young men within counties may be greater than that in the current data. Similarly, high school completion results maintained by Los Angeles County differed considerably from those provided by DMDC.

While these findings were for a single county and the discrepancies may be partly due to definitional and/or measurement inconsistencies, they do indicate a need for caution in deriving estimates at the county level, as well as a need for more accurate sources of data. [Ref. 9:p. 15]

2. Propensity Factor

The most prominent component of the propensity factor is the YATS Index. The formula for computing this index is:

of positive responses / total # surveyed.

Assessing respondents' positive propensity to enlist in either the active or reserve military is a primary focus of the YATS survey. The specifics involved in determining positive or negative propensity were discussed earlier in this paper and will not be repeated here. Previous studies have consistently shown that about 50 percent of all persons indicating a positive propensity to enlist (on the YATS) eventually join the military [Ref. 3].

The YATS is the most comprehensive ongoing survey of its type available to researchers today. It is obviously not perfect, but it is extremely useful. Changes are also constantly being made to enhance its usefulness as a segmenter of the manpower market to facilitate predicting quality as well as quantity.

Another component of the propensity factor is the Unemployment Index. The unemployment index for each district is computed by dividing the district unemployment rate by the national unemployment rate. During the period when the manufacturing industry was the major employer of labor in the U. S., low levels of unemployment meant difficult times for military recruiting. Historical data show that "since 1976, the unemployment rate for young males increased in three years (1980-82) and decreased in seven years (1977-79 and 1983-86). Each of the three years that the unemployment rate for young males increased, positive propensity also increased. In the seven years that unemployment rates fell, however, positive propensity fell in five years (as expected) and increased in two years (contrary to expectation)." [Ref. 11] The data suggest that there are other important factors at work here in addition to the expected positive relationship between employment rates and positive propensity.

The shift from manufacturing industry dominance to service industry dominance as the major source of civilian

employment in the U. S. has had great impact on positive propensity. Wherein the decision point used to be the level of unemployment, it is now largely a choice of underemployment or the military. Employment in manufacturing once represented an opportunity to earn a better-than-average wage, a creditable alternative to the military. The service industry came about in the wake of struggling American manufacturers' efforts to compete with cheaper foreign imports. The trend caught on quickly and the large majority of job opportunities for young people just graduating from high school are in the service industry (e.g., fastfoods, hotels, etc.). These jobs, though plentiful, typically offer lower wages and limited opportunities for advancement. [Ref. 11] This aspect of the economy lends some explanation to the success of the All-Volunteer Force in light of expected low levels of unemployment throughout the 1980s. It also brings to question the usefulness of the traditional unemployment variable, without some modification, in the propensity factor.

The PPC Index is another component of the propensity factor. The purpose of the PPC is to measure the number of quality leads generated compared to the volume of direct mailing. The percent of quality leads is equal to the number of quality leads divided by the volume of mailing. The PPC Index is equal to the district percent of quality

leads divided by the nationwide percent of quality leads. This program seems to be a source of contracts that demands little time compared with other more active recruiting activities. A cost-benefit analysis would be required to determine its true value to the recruiting effort.

The Productivity Index is the final component of the propensity factor. Productivity is first computed by dividing net new contracts in the district by the Table of Organization (T/O) of recruiters. Then, the index is calculated by dividing district productivity by nationwide productivity. This index lends itself to internal controls and is greatly affected by recruitment quotas. [Ref. 12: p. 6] The performance of this index in the model is thus closely tied to the performance of other components and the percent quota product.

The propensity factors are invaluable in that they enable the model to recognize "taste" differences between districts and account for these differences in the distribution of recruiters and recruitment quotas. Introduction of this factor alone, was responsible for a major shift in the quota distribution in fiscal 1986. The greatest impact was in the Northeast and the Pacific districts. The quota percentage in the Northeast dropped approximately 3 percentage points while the Pacific quota percentage increased by over 4 percentage points. [Ref. 9]

3. Summary

The Marine Corps' model for determining "fairshare quota distribution" has been examined according to the criteria for a "good" supply model presented in Chapter II. It is readily apparent that each separate component of the model makes a contribution to the recruitment effort. However, the two most important components for planning future goals and objectives appear to be QMA and YATS. Market size and propensity are constants over which the Marine Corps has no control, and can at best be coped with through the use of estimates from the QMA model and the YATS results. Quotas and recruiters are variables over which the Marine Corps does have control, and their efficient allocation is contingent on the accuracy of QMA and YATS data.

The model for estimating QMA appears to be of sound logic and well-designed. QMA estimates are, however, limited by the lack of demographic data available at the local level (e.g., county, recruit station, etc.). This is part of the difficulty in equitably distributing recruitment quotas within recruitment districts. Of even greater and more immediate concern is the YATS index. There is little knowledge of the potential uses of YATS in the military manpower environment. Due to this fact and because it is currently in the the Marine Corps' recruitment model, a research effort focused on exploring the relationship

between intentions/propensity as determined by the YATS and subsequent enlistment behavior is warranted. The results of such a study should shed some light on the effectiveness of the YATS index as it is currently employed, and suggest alternative uses of YATS information.

Accurate and fair quotas are important in identifying the desired quantity and quality of recruits. They may also have a strong impact on the careers of recruiters and their perceptions of equitable treatment [Ref. 13]. These are important concerns and all possible care and attention should be devoted to making marked strides in this area.

IV. PRESENTATION OF DATA

This chapter presents the results of an exploratory research effort. The general objective of the study is to cast some light on the relationship between an individual's stated intention to join or not join the military -- as evidenced in the Youth Attitude Tracking Study -- and his subsequent enlistment behavior. In addition, the study attempts to discover how the Marine Corps might benefit from knowledge of both an individual's enlistment behavior and military performance, given a preliminary statement of interest or disinterest in joining. It is hoped that this information will add to current understanding of military "propensity," and help in building a foundation for further research.

A. DATA

The Youth Attitude and Tracking Study, or YATS, is a survey that has been conducted twice annually prior to 1981 (referred to as the spring and fall waves), and once a year since. The YATS is sponsored by the Department of Defense, and is designed to assess the general attitudes of youths concerning military service and their awareness of the opportunities provided by the Services. This thesis uses survey responses for the period Spring 1976 to Fall 1983. The survey involves 16 to 21 year-old men and women who do

not have prior or current involvement in the military and who are not beyond their second year of college. Women were not included in the survey until 1981. They were eliminated from the sample for the purpose of this analysis, leaving a male only YATS sample of 71,764 respondents. An older group has also been included in the YATS survey over recent years for special study purposes. The older group of survey respondents were also excluded in the present analysis.

The YATS survey employs telephone interviewing and respondents are selected by random digit dialing. Approximately two-hundred interviews are completed for each survey wave across twenty-six geographic areas within the Continental United States (CONUS). These so-called tracking areas are synonymous with regionally representative clusters and are defined in such a way as to account for every county in CONUS. This strategy provides for national conclusions to be drawn from the survey findings. Furthermore, the study is designed to provide longitudinal observations over time to detect changes in attitude and behavior, and the probable attributions.

The YATS survey data were used in this analysis to categorize each respondent in terms of propensity to join the military. For the purpose of determining propensity, the YATS uses two questions, both with possible responses of "definitely," "probably," "probably not," and "definitely not." The first question is posed after several other

general questions about whether the respondent is in school, finished school, working, looking for work, and so on. The question asks: "What do you think you might be doing in the next few years?" The technique used to pose this question is to probe with "anything else?" as opposed to reading off a list of possibilities, which would actually have an effect of leading the respondent into a desired reply. Probing continues until it proves to be unproductive. The results of this question will henceforth be referred to as general intentions and will refer to propensity only if specifically stated.

The second question is asked later in the interview and is introduced as follows: "I'm going to read you a list of things that men your age might be doing in the next few years. For each one I read, please tell me how likely it is that you will be doing that. For instance, how likely is it that you would be ... (read statement)?" Serving in the military is one of the items listed and a "definitely" or "probably" response results in another question about which particular service the individual might be interested in joining (e.g., Army, Navy, Marine Corps, Air Force, and Coast Guard).⁴ The possible responses are the same as in

⁴These active duty services, only, are applicable to this analysis. The survey includes the National Guard and other reserve components as well, and their total accessions from 1976 through 1983 were 748. These accessions, as well as accessions into the officer ranks, are not included in the analysis.

the previous question (definitely to definitely not). The answers to this question will henceforth be referred to as specific intention or propensity. It is important to note the distinction made between intention and propensity. The term intention is used in reference to the four responses ranging from "definitely" to "definitely not." The term propensity is used to express "positive" or "negative" propensity. Positive propensity, in turn, is defined by the responses of "definitely" or "probably" -- while negative propensity includes the responses of "probably not" or "definitely not."

The demographic data selected from the YATS survey for use in the analysis were selected on the grounds of both popular choices among researchers in the area of manpower supply research and the author's personal experience and assessment of response frequencies. The selected demographic variables for each survey case are presented in table 3 on the following page.

Since this thesis is concerned with the actual enlistment decisions of individuals given a specific response to the YATS survey, the survey data were merged with Defense Manpower Data Center (DMDC) cohort files. These cohort files contain data from the records of the Military Enlistment Processing Command (MEPCOM). The DMDC cohort data are for the period from 1976 through 1987, allowing for a follow-up period of at least four years in

which to observe the most recent enlistment behavior and military performance of respondents to the Fall 1983 YATS.

TABLE 3

SUMMARY OF VARIABLES
(YATS SURVEY)

<u>Dichotomous Variable</u>	<u>Description</u>	
Age	1	16 thru 18
	0	19 thru 21
Race		
White	1	White
	0	Non-White
Black	1	Black
	0	Non-Black
Highest Level of Education	1	High School Degree/Higher
	0	Below High School Degree
Employment	1	Looking For Job
	0	Not Looking For Job
* Future Military Plans		
General	1	Definitely, Probably
	0	Probably Not, Definitely Not
Specific	1	Definitely, Probably
	0	Probably Not, Definitely Not
** Branch	1	Army
	2	Navy
	4	Marine Corps
	3	Air Force
	5	Coast Guard

* 1 also indicates stated plans for military, and 0 indicates no stated plans.

** Denotes the only non-dichotomous variable in the table.

Table 4 on the following page is a summary of the demographic and military service variables used in the analysis pertaining to cases of individuals who enlisted in the military at some time subsequent to participation in the YATS survey. Additionally, table 5 summarizes the computations used to derive performance variables for analysis. Note that the list of possible service of accession does not include the Coast Guard. This reflects that none of the survey respondents enlisted in the Coast Guard.

B. METHODOLOGY

The analysis was conducted in three distinct phases: (1) Phase One consisted of an analysis of the YATS survey data in terms of propensity distribution by survey year, and then, screening the selected demographics for differences in propensity; (2) Phase Two highlighted the exploration of a series of relationships between intentions/propensity and service of accession while controlling for selected variables; and (3) Phase Three featured the creation of some positive performance measures, and their use along with negative performance indicators contained within the DMDC cohort files, in comparing the performance of negative versus positive propensity enlistees.

The analysis uses frequencies and crosstabulations. The statistical package of SPSSX was used for investigation of all possible relationships between propensity and the

TABLE 4

SUMMARY OF VARIABLES
(ACCESSION DATA)

<u>Variable</u>		<u>Description</u>
Service of Accession	1	Army
	2	Navy
	4	Marine Corps
	3	Air Force
Level of Education	1	High Schoool Grad
	0	No High School Grad
Armed Forces Qualification Test (AFQT) Category	1	Cat IVa and below
	2	Cat IIIb
	3	Cat IIIa
	4	Cat II
	5	Cat I
Dichotomous Variables:		
Moral Waiver	1	Moral Waiver
	0	No Moral Waiver
Combat Arms Bonus	1	Present
	0	Not Present
Advanced Grade	1	Present
	0	Not Present
Accelerated Promotion	1	Present
	0	Not Present
Training/Skill Guaranty	1	Present
	0	Not Present
Average or Above Performer (E-1 thru E-5)	1	Average or Above
	0	Below Average
Average or Above Performer (E-6)	1	Average or Above
	0	Below Average
Average or Above Performer (E-7)	1	Average or Above
	0	Below Average
Reenlistment	1	Reenlist
	0	No Reenlist
Early Release From Service	1	Attrition
	0	No Attrition
Other Than Honorable or Dishonorable Discharge	1	Unfavorable Discharge
	0	No Unfavorable Discharge

decision to enlist, based on individual demographic data. Both two-way and three-way crosstabulations were employed in the analysis and intuitive conclusions were drawn by simple observation of the results of these crosstabular operations. The three-way approach to comparing relationships between three variables by holding one constant, and observing the associated behavior given the other two, greatly enhances the insight into possible interactions that go unaccounted for in a simple two-way analysis. In the absence of more powerful statistical procedures, felt unnecessary for the purpose of this thesis, the three-way crosstabulation procedure can prove extremely useful.

Beyond the effects on enlistment behavior, further analyses are conducted with emphasis on the role of enlistment incentives in the decision to enlist in one service as opposed to another. All of the enlistment incentives contained in the DMDC cohort files were used in this section of the analysis. This section is highlighted by a single attempt to account for the behavior of individuals who stated a specific preference for the Marine Corps and then proceeded to enlist in another service. The success of this effort could have strong policy implications.

The final section involves an analysis of the military performance differences between members of the positive and negative propensity groups. For this purpose, variables

indicative of military performance were created using data from the DMDC cohort files and various logical functions within SPSSX. The performance variables and the logical functions used in their generation are shown in table 5. Additionally, some variables indicative of "undesirable" performance are examined for comparison of participation rates based on propensity. All of these variables were previously described in Table 4.

TABLE 5
SUMMARY OF PERFORMANCE VARIABLE COMPUTATIONS

<u>Variable</u>	<u>COMPUTATION</u>
Reenlistment	If Total Active Service > Term of Enlistment Then Reenl = 1 Otherwise Reenl = 0
Performance:	
	Number of Promotions = Paygrade - Entry Paygrade
Average or Above Performer (E-1 thru E-5)	If Number of Promotions > 5 and > or = Total Active Service Then AvPerf = 1 Otherwise AvPerf = 0
Average or Above Performer (E-6)	If Number of Promotions = 5 and > or = Total Active Service / 2 Then AvPerf = 1 Otherwise AvPerf = 0
Average or Above Performer (E-7)	If Number of Promotions = 6 and > or = Total Active Service / 3 Then AvPerf = 1 Otherwise Avperf = 0

C. RESULTS

The tables on the following pages contain the results of the analysis. Additional tables with relevant data results may be viewed in the appendix.

D. INTERPRETATION OF RESULTS

1. Survey Data

The survey data alone are observed in tables 6 and 7, and since the survey data are longitudinal, they are an excellent tool for detecting trends or changes in behavior at different points in time. The survey is not administered to the same individual more than once, so it does not lend itself to detection of any changes in an individual's response over time. However, Table 6 does reveal that there is little change in the overall propensity of young men in the U. S. to join the military over time. A notable exception is 1982, when positive and negative propensity rates were 30.7 and 69.3 percent, respectively, compared to the averages over the entire period of 24.7 and 75.3 percent. This more favorable outlook upon military service suggested by the 1982 rates might reflect the end of a recessionary period at the time. This period is also noted for high youth unemployment rates, as a result of the combined effects of an economic recession and a peak in the number of persons in the young male population. This resulted in an excess supply of labor for the available jobs, making military service a relatively more attractive

TABLE 6
PERCENT DISTRIBUTION
SURVEY YEAR
BY PROPENSITY

Count Row Percent			
SURVEY YEAR	POSITIVE	NEGATIVE	ROW TOTAL
1976	2,127 (25.1)	6,345 (74.9)	8,472
1977	2,808 (25.9)	8,035 (74.1)	10,843
1978	2,214 (24.0)	6,992 (76.0)	9,206
1979	2,459 (23.7)	7,936 (76.3)	10,395
1980	3,404 (21.8)	12,181 (78.2)	15,585
1981	1,518 (29.2)	3,683 (70.8)	5,201
1982	1,837 (30.7)	4,155 (69.3)	5,992
1983	1,340 (22.1)	4,730 (77.9)	6,070
COLUMN TOTAL	17,707 (24.7)	54,057 (75.3)	71,764 (100.0)

SOURCE: Derived from Youth Attitude Tracking Study data,
1976-1983.

TABLE 7

PERCENT DISTRIBUTION
SELECT SURVEY DEMOGRAPHICS
BY PROPENSITY

Count Percent			<u>PROPENSITY</u>		
<u>DICHOTOMOUS VARIABLE</u>			<u>POSITIVE</u>	<u>NEGATIVE</u>	<u>TOTAL</u>
AGE	1	16 thru 18	13,905 (29.7)	32,854 (70.3)	46,759
	0	19 thru 21	3,802 (15.2)	21,203 (84.8)	25,005
WHITE	1	WHITE	12,391 (22.7)	42,269 (77.3)	54,660
	0	NON-WHITE	5,109 (37.6)	8,472 (62.4)	13,581
BLACK	1	BLACK	3,238 (40.9)	4,671 (59.1)	7,909
	0	NON-BLACK	14,262 (23.6)	46,070 (76.4)	60,332
GRAD	1	AT LEAST HIGH SCHOOL DEGREE	2,691 (15.3)	14,882 (84.7)	17,573
	0	LESS THAN HIGH SCHOOL DEGREE	15,016 (27.7)	39,175 (72.3)	54,191
ABOVE AVERAGE GRADES	1	A's & B's/ B's & C's	13,351 (23.1)	44,466 (76.9)	57,817
	0	C's & D's/ D's & BELOW	4,356 (31.2)	9,591 (68.8)	13,947
LOOKING FOR JOB	1	LOOKING	5,855 (34.6)	11,085 (65.4)	16,940
	0	NOT LOOKING	11,852 (21.6)	42,972 (78.4)	54,824
FUTURE PLANS MILITARY	1	YES	2,934 (91.1)	287 (8.9)	3,221
	0	NO	7,959 (20.6)	30,752 (79.4)	38,711

alternative. Note the substantial reduction in the total number surveyed in years 1981-83. This should have an effect on the number of accessions from these survey groups in future analyses.

Table 7 presents relevant demographic data from the survey and analyzes each variable in terms of the enlistment propensity of an individual who possesses or does not possess the relevant characteristic. In the case of each of the variables, there is a difference of more than 10.0 percentage points between corresponding positive and negative propensity rates within the dichotomous variable relationships. A dichotomous variable is one in which the variable represents the presence or non-presence of a specific quality. The primary purpose for aggregating the variable values into 1 (present) or 0 (not present) is to facilitate handling in statistical computer procedures, and it is used throughout this analysis. An exception to the 10.0 percentage point difference is in the case of the above-average grades item, with a difference of only 8.1 percentage points. The results consistently reflect that there are noticeable differences in military propensity rates among individuals with different backgrounds.

The future plans for military service variable is particularly noteworthy with a difference in propensity rates of almost 70.0 percentage points between individuals who stated plans to join and those who did not. The very

low probability of a person with stated intentions responding positively to the specific service question is also worth noting. Though this high likelihood of continued positive propensity within the timeframe of a single, hour-long interview, is somewhat expected, the small number of responses that defied this expectation is worth exploring.

2. Accession Data

Table 8 marks the beginning of data pertaining to those individuals from the survey who subsequently joined the active duty military. The table is presented to give a clear depiction of the service choices made by survey members from particular survey groups, by year. The proportion of accessions from each survey group by specific branch of service is very consistent for the entire analytical period. No service's proportion varies more than 5 percent across the period. The substantial drop in total accessions for survey years 1981-83 are reflective of the reduced number of survey participants for those years as evidenced in Table 6. Below is the percentage distribution of accessions, by service, over the fiscal 1987 period.

<u>ARMY</u>	<u>NAVY</u>	<u>USMC</u>	<u>USAF</u>	<u>DOD</u>
40.1	30.7	12.2	17.0	100.0

It is interesting to note that the percentage distribution of new recruits across the services in the most recent

TABLE 8

PERCENT DISTRIBUTION
SURVEY YEAR BY
SERVICE OF ACCESSION

COUNT
ROW PERCENT

<u>SURVEY YEAR</u>	<u>Service of Accession</u>				<u>ROW TOTAL</u>
	<u>ARMY</u>	<u>NAVY</u>	<u>USMC</u>	<u>USAF</u>	
1976	235 (38.7)	160 (26.4)	71 (11.7)	71 (11.7)	607
1977	303 (41.5)	194 (26.5)	70 (9.6)	141 (23.2)	731
1978	239 (36.9)	157 (24.2)	88 (13.6)	164 (22.5)	648
1979	245 (36.7)	176 (26.4)	83 (12.4)	170 (25.5)	667
1980	285 (39.9)	177 (24.8)	83 (11.6)	170 (25.5)	715
1981	131 (43.8)	67 (22.4)	31 (10.4)	70 (23.4)	299
1982	135 (42.6)	68 (21.4)	33 (10.4)	81 (25.6)	317
1983	100 (41.5)	67 (27.8)	30 (12.4)	44 (18.2)	241
COUNT TOTAL	1,673 (39.6)	1,066 (25.2)	482 (23.8)	1,004 (11.4)	4,225

SOURCE: Derived from Youth Attitude Tracking data, 1976-1983 and Defense Manpower Data Center cohort files, 1976-1987.

fiscal year is remarkably similar to the distribution of survey respondents in the period shown in Table 8. This brings to mind a question of some interest to manpower modelers. Are the numbers of enlistments more a function of supply or demand? Many models do not adequately take into account demand constraints, and the data here imply that demand, more than other factors, is a strong force in meeting recruitment goals.

Table 9 shows the relationship between the service of accession and specific intentions, controlling for general plans to join the military. The first iteration, stated plans for the military, gives a vivid illustration of the rather strong association between the specific intention response and actual enlistment. The result is that 96.8 percent of enlistments from this group were classified as having positive propensity, based on their response to the specific question. Note that a very small percentage (3.2) had negative propensity. The second iteration, no stated plans for military, shows that 60.0 percent of enlistments from this group come from the negative propensity categories. Additionally, only 3.6 percent come from the group responding "definitely" to the specific question. It could be concluded from these results that, given the availability of responses to both the general and specific intention questions, the two should be used together in

TABLE 9

PERCENT DISTRIBUTION
SERVICE OF ACCESSION
BY INTENTION

Controlling for: Plans for Military

COUNT
ROW PERCENT
COLUMN PERCENT

1. Stated Plans for Military

<u>SERVICE OF ACCESSION</u>	<u>DEFINITELY</u>	<u>PROBABLY</u>	<u>PROBABLY NOT</u>	<u>DEFINITELY NOT</u>	<u>ROW TOTAL</u>
ARMY	108 (40.4) (38.0)	151 (56.6) (43.0)	4 (1.5) (26.7)	4 (1.5) (66.6)	267 (40.7)
NAVY	72 (47.7) (25.4)	76 (50.3) (21.7)	2 (1.3) (13.2)	1 (.7) (16.7)	151 (23.0)
MARINE CORPS	39 (48.8) (13.7)	40 (50.0) (11.4)	1 (1.2) (6.7)	0	80 (12.2)
AIR FORCE	65 (41.1) (22.9)	84 (53.2) (23.9)	8 (5.1) (53.3)	1 (.6) (16.7)	158 (24.1)
COLUMN TOTAL	284 (43.3)	351 (53.5)	15 (2.3)	6 (.9)	656 (100.0)

TABLE 9 (CONTINUED)

PERCENT DISTRIBUTION
SERVICE OF ACCESSION
BY INTENTION

Controlling for: Plans for Military

COUNT
ROW PERCENT
COLUMN PERCENT

2. No Stated Plans for Military

<u>SERVICE OF</u> <u>ACCESSION</u>	<u>DEFINITELY</u>	<u>PROBABLY</u>	<u>PROBABLY</u> <u>NOT</u>	<u>DEFINITELY</u> <u>NOT</u>	<u>ROW</u> <u>TOTAL</u>
ARMY	29 (4.2) (47.5)	265 (38.5) (41.5)	238 (34.5) (37.3)	157 (22.8) (37.9)	689 (39.3)
NAVY	16 (3.8) (26.2)	148 (35.3) (23.2)	162 (38.7) (25.4)	93 (22.2) (22.5)	419 (23.9)
MARINE CORPS	9 (4.3) (14.8)	81 (38.6) (12.7)	72 (34.3) (11.3)	48 (22.9) (11.6)	210 (12.0)
AIR FORCE	75 (1.6) (11.5)	144 (33.3) (22.6)	166 (38.3) (26.0)	116 (26.8) (28.0)	433 (24.8)
COLUMN TOTAL	61 (3.6)	638 (36.4)	638 (36.4)	414 (23.6)	1,751 (100.0)

SOURCE: Derived from Youth Attitude Tracking Study data, 1976-1983 and Defense Manpower Data Center cohort files, 1976-1987.

constructing the propensity/intentions variable for manpower forecasting models.

Table 10 indicates that the relationship between the preferred branch of service (for individuals with stated plans for military service) and the actual service of accession is not very strong. The proportion of individuals who had stated plans of joining the Marine Corps, and then followed through on their plans (42.8 percent), is by far the greatest of any service. This lends some statistical substance to the fleet experience of some other service recruiters who have stated: "It is most difficult to convert an individual asking for the 'Marine Recruiter' to some other service. Prospective recruits of other services are more easily swayed." The proportion of Army "follow-throughs," in this case, is second at 30.9 percent, while the Navy and the Air Force have lower proportions at 14.5 percent and 11.7 percent, respectively.

There are many possible explanations for the lack of a strong observable relationship between acknowledged preference for a particular branch of service and actual enlistment in that service. These data do not permit the examination of the role individual qualification plays here -- though such research could be undertaken using the DMDC applicant files. Some of the diversions may be explained by Table 11, an analysis of branch by service of accession controlling for the following recruitment incentive

TABLE 10

PERCENT DISTRIBUTION
BRANCH BY SERVICE
OF ACCESSION

COUNT ROW PERCENT	<u>SERVICE OF ACCESSION</u>				<u>ROW TOTAL</u>
	<u>ARMY</u>	<u>NAVY</u>	<u>USAF</u>	<u>USMC</u>	
<u>BRANCH</u>					
ARMY	82 (30.9)	49 (18.5)	115 (43.4)	19 (7.2)	265
NAVY	107 (62.2)	25 (14.5)	21 (12.2)	19 (11.0)	172
MARINE CORPS	22 (31.4)	9 (12.9)	9 (12.9)	30 (42.8)	70
AIR FORCE	5 (29.4)	8 (47.2)	2 (11.7)	2 (11.7)	17
COAST GUARD	40 (32.5)	63 (51.2)	12 (9.8)	8 (6.5)	123
<u>COLUMN TOTAL</u>	<u>256</u>	<u>154</u>	<u>159</u>	<u>78</u>	<u>647</u> (100.0)

NOTE: This question applicable only when response to plans for military is YES.

SOURCE: Derived from Youth Attitude Tracking Study data, 1976-1983 and Defense Manpower Data Center cohort files, 1976-1987.

TABLE 11

ANALYSIS OF BRANCH
BY SERVICE OF ACCESSION

1. Training/Skill Guaranty -- Where this variable is present, the following apply:

<u>Original Choice</u>	<u>Eventual Service of Accession</u>	<u>Number of People</u>
Army	Navy	3
Navy	Army	52
"	Air Force	1
Marine Corps	Army	1
Air Force	Army	1
Coast Guard	Army	13
" "	Navy	2

2. Combat Arms Bonus--Where this variable is present, the following apply:

<u>Original Choice</u>	<u>Eventual Service of Accession</u>	<u>Number of People</u>
Navy	Army	12
Marine Corps	Army	1
Coast Guard	Army	1

3. Accelerated Promotions--Where this variable is present, the following apply:

<u>Original Choice</u>	<u>Eventual Service of Accession</u>	<u>Number of People</u>
Army	Navy	6
Navy	Army	1
Marine Corps	Navy	1
" "	Air Force	1
Coast Guard	Army	3
" "	Navy	5

TABLE 11 (CONTINUED)

4. Advanced Grade -- Where this variable is present, the following apply:

<u>Original Choice</u>	<u>Eventual Service of Accession</u>	<u>Number of People</u>
Army	Navy	45
"	Air Force	115
"	Marine Corps	19
Navy	Army	98
"	Air Force	21
"	Marine Corps	19
Marine Corps	Army	21
" "	Navy	8
" "	Air Force	9
Air Force	Army	5
"	Navy	8
"	Marine Corps	2
Coast Guard	Army	38
" "	Navy	55
" "	Air Force	12
" "	Marine Corps	8

variables: 1. Training/Skill Guaranty; 2. Combat Arms Bonus; 3. Accelerated Promotions; and 4. Advanced Grade.

It is further worth noting that, with respect to individuals who stated a preference for the Marine Corps, but subsequently enlisted in another service, each case can be accounted for within the scope of this simple analysis. Referring to table 10, it is evident that 40 out of 70 individuals with expressed preference for the Marine Corps joined another service. The above table identifies each service and the specific incentive that might have been responsible for diverting individuals from the Marine Corps. These so called "diversions" are perhaps more clearly

explained in the context of Table 12. These results strongly suggest the potential for attracting into a service individuals who would have gone elsewhere were it not for the incentives offered them.

TABLE 12
EXPLANATION FOR "DIVERSIONS" FROM THE MARINE CORPS
BASED ON BRANCH OF SERVICE RESPONSE

<u>To</u>	<u>Number</u>	<u>Source of Enticement</u>	<u>Total</u>
Army	21	Advanced Grade	22
	1*	Combat Arms	
	1*	Training/Skill	
Navy	8	Advanced Grade	9
	1	Accelerated Promotion	
Air Force	9	Advanced Grade	<u>9</u>
Total			40

* One of these enticements are offered concurrently with Advanced Grade for a single individual.

Tables 13 and 14 present analytical results pertaining to the most popular quality considerations in the recruitment arena. High school graduation and relatively high Armed Forces Qualification Test (AFQT) scores define a "quality" recruit. High school graduates are on the average, twice as likely to complete their first term of enlistment. The granting of moral waivers has become yet another item of interest to manpower policymakers and it is

included in Table 13 as a quality measure. AFQT scores provide a good measure of an individual's "trainability"; persons with higher scores are generally more likely to successfully complete their training.

Table 13 gives a breakdown by service of high school graduation status and the particular AFQT Category. (There are five AFQT Categories: Category I is the highest and Category V is the lowest. Persons scoring in AFQT Category V are not permitted to enter military service, and service admissions standards attempt to keep the number of persons scoring in AFQT Category IV to a minimum). The Air Force's results of 97.5 percent of all new accessions with high school diplomas over the period of analysis is very impressive. This is particularly true when we take into account the fact that the data include the recruiting results of the late 1970's, a relatively difficult period for the all-volunteer force. Other services demonstrate success in attracting "quality" recruits, but the Air Force is still well ahead in this area.

The services engage in granting moral waivers almost evenly across the board among their positive and negative propensity members. The Air Force has the least number of such waivers at 58, while the Marine Corps edged out the Navy for the highest number at 262. These numbers are only comparable if viewed in terms of percentage of total accessions. In so doing, we find that for the Marine Corps,

TABLE 13

PERCENT DISTRIBUTION
SERVICE OF ACCESSION
SELECTED QUALITY MEASURES

COUNT
ROW PERCENT

1. LEVEL OF EDUCATION

<u>SERVICE OF ACCESSION</u>	<u>COMPLETED HIGH SCHOOL</u>	<u>DID NOT COMPLETE HIGH SCHOOL</u>	<u>ROW TOTAL</u>
ARMY	1,387 (82.9)	286 (17.1)	1,673
NAVY	953 (89.4)	113 (10.6)	1,066
MARINE CORPS	422 (87.6)	60 (12.4)	482
AIR FORCE	979 (97.5)	25 (2.5)	1,004
<hr/> COLUMN TOTAL	<hr/> 3,741 (88.5)	<hr/> 484 (11.5)	<hr/> 4,225 (100.0)

2. Moral Waiver

<u>PROPENSITY</u>	<u>ARMY</u>	<u>NAVY</u>	<u>USMC</u>	<u>USAF</u>	<u>ROW TOTAL</u>
POSITIVE	72 (50.0)	124 (48.6)	134 (51.1)	27 (46.6)	357
NEGATIVE	72 (50.0)	131 (51.4)	128 (48.9)	31 (53.4)	362
<hr/> COLUMN TOTAL	<hr/> 144	<hr/> 255	<hr/> 262	<hr/> 58	<hr/> 719

TABLE 13 (CONTINUED)

PERCENT DISTRIBUTION
SERVICE OF ACCESSION BY AFQT CATEGORY

COUNT
ROW PERCENT
COLUMN PERCENT

3. AFQT CATEGORY

<u>SERVICE OF ACCESSION</u>	<u>CAT IVa & BELOW</u>	<u>CAT IIIb</u>	<u>CAT IIIa</u>	<u>CAT II</u>	<u>CAT I</u>	<u>ROW TOTAL</u>
ARMY	449 (27.4) (57.1)	414 (25.2) (38.6)	276 (16.8) (40.1)	406 (24.8) (32.3)	95 (5.8) (33.9)	1,640 (40.2)
NAVY	170 (16.5) (21.6)	250 (24.3) (32.3)	159 (15.5) (32.1)	364 (35.4) (28.9)	86 (8.4) (30.7)	1,029 (25.2)
MARINE CORPS	92 (19.6) (11.7)	146 (31.1) (13.6)	76 (16.2) (11.0)	130 (27.7) (10.3)	25 (5.3) (8.9)	469 (11.5)
AIR FORCE	75 (7.9) (9.5)	262 (27.7) (24.4)	177 (18.7) (25.7)	358 (37.8) (28.5)	74 (7.8) (26.4)	946 (23.3) (23.2)
COLUMN TOTAL	786 (19.2)	1,072 (26.2)	688 (16.8)	1,258 (30.8)	280 (6.9)	4,085

SOURCE: Derived from Youth Attitude Tracking Study data, 1976-1983 and Defense Manpower Data Center cohort files, 1976-1987.

262 represents 54.4 percent of total accessions and for the Navy, 255 represents 23.9 percent of total accessions. Cross-service comparisons of moral waivers should not be made, however, since each service exercises its own policies

in defining civilian behavior that may require a moral waiver as well as in granting these waivers.

The results of the breakdown of AFQT category by service indicate that the Air Force has the smallest percentage of YATS respondents falling in the lowest AFQT category and that they are the least representative of Air Force YATS accessions as a whole. The Navy has the highest percentage of total accessions in Category I, while the Army has the highest percentage of the total Category I accessions. The Army and Marine Corps accessions generally are less well-represented in the upper two AFQT categories and more represented in the lowest category compared with the Navy and the Air Force.

Table 14 compares recipients of recruitment incentives by propensity, and controlling for AFQT Category I-II and Category IIIa (Persons scoring at or above AFQT Category IIIa are in the upper 50th percentile of the score distribution). Categories I and II are dominated by negative propensity persons -- 1,109 in all, compared with 758 of the positive group. The positive propensity group is slightly more represented among accessions in Category IIIa (413 compared with 376 of the negative propensity group). For both AFQT groupings examined here, it is generally true that the percentage positive or negative propensity within each incentive variable, where the particular incentive is present, is greatest in accordance with the propensity with

TABLE 14

INCENTIVE VARIABLES
BY PROPENSITY -- CONTROLLING FOR AFQT CATEGORY

		COUNT			
		ROW PERCENT			
1. <u>AFQT Category I-II</u>					
<u>DICHOTOMOUS INCENTIVE VARIABLE</u>			<u>POSITIVE PROPENSITY</u>	<u>NEGATIVE PROPENSITY</u>	<u>ROW TOTAL</u>
COMBAT ARMS BONUS	1	PRESENT	15	18	33
			(45.5)	(54.5)	(5.7)
	0	NOT PRESENT	743	1,001	1,844
			(42.6)	(57.4)	(98.1)
COLUMN TOTAL			758	1,109	1,777
			(46.7)	(53.3)	
ADVANCED GRADE	1	PRESENT	74	115	189
			(39.2)	(60.8)	
	0	NOT PRESENT	684	904	1,588
			(43.1)	(56.9)	
COLUMN TOTAL			*	*	*
ACCELERATED PROMOTION	1	PRESENT	79	88	167
			(47.3)	(52.7)	
	0	NOT PRESENT	679	931	1,610
			(42.2)	(57.8)	
COLUMN TOTAL			*	*	*
TRAINING/ SKILL GUARANTY	1	PRESENT	83	108	191
			(43.5)	(56.5)	
	0	NOT PRESENT	675	911	1,586
			(42.6)	(57.4)	
COLUMN TOTAL			*	*	*

* Indicates that column results are constant in the case of each incentive variable.

SOURCE: Derived from Youth Attitude Tracking Study data, 1976-1983 and Defense Manpower Data Center cohort files, 1976-1987.

TABLE 14 (CONTINUED)

INCENTIVE VARIABLES
BY PROPENSITY -- CONTROLLING FOR AFQT CATEGORY

COUNT					
ROW PERCENT					
2. <u>AFQT Category IIIa</u>					
DICHOTOMOUS INCENTIVE <u>VARIABLE</u>			<u>POSITIVE PROPENSITY</u>	<u>NEGATIVE PROPENSITY</u>	<u>ROW TOTAL</u>
COMBAT ARMS BONUS	1	PRESENT	8	6	14
			(57.1)	(42.9)	
	0	NOT PRESENT	405	370	775
			(52.3)	(47.7)	(98.2)
COLUMN TOTAL			413	376	789
			(52.3)	(47.7)	(100.0)
ADVANCED GRADE	1	PRESENT	28	25	53
			(52.8)	(47.2)	(24.4)
	0	NOT PRESENT	385	351	736
			(52.3)	(47.7)	(93.3)
COLUMN TOTAL			*	*	*
ACCELERATED PROMOTION	1	PRESENT	14	10	24
			(58.3)	(41.7)	
	0	NOT PRESENT	399	366	765
			(52.2)	(47.8)	(97.0)
COLUMN TOTAL			*	*	*
TRAINING/ SKILL GUARANTY	1	PRESENT	62	64	126
			(49.2)	(50.8)	(58.0)
	0	NOT PRESENT	351	312	663
			(52.9)	(47.1)	(84.0)
COLUMN TOTAL			*	*	*

* Indicates that column results are constant in the case of each incentive variable.

SOURCE: Derived from Youth Attitude Tracking Study data, 1976-1983 and Defense Manpower Center cohort files, 1976-1987.

the larger representation in the AFQT category. For example, the majority of the persons in Categories I-II are of negative propensity, and they make up the majority of those receiving a combat arms bonus. This relationship holds for each incentive, but is less pronounced for the accelerated promotion incentive where there is only a 4.9 percentage point difference.

Among the members of Category IIIa, the same relationship is apparent; however, the difference in the total numbers when broken down by propensity, is only 37. There are rather substantial differences in this group where the combat arms bonus and accelerated promotion variables are present. The differences are 14.2 and 16.6 percentage points, respectively, in the same direction as majority representation. The lone exception to the above pattern is in the case of the training/skill guaranty variable, where 50.8 percent of the negative propensity group received this incentive, compared with 49.2 percent for the positive propensity group. Recall that the negative propensity group is less represented in Category IIIa. Further investigation of the probable causes of this slight difference might prove to be a very enlightening and is recommended for inclusion in further research.

Table 15 shows the association between propensity and being a high school graduate, while controlling for "average" or "above average" performance. The table further

TABLE 15

PROPENSITY BY HIGH
SCHOOL GRADUATE --
CONTROLLING FOR PERFORMANCE

COUNT
 ROW PERCENT
 COLUMN PERCENT

1. Controlling for Average or Above Average Performance
(E-1 thru E-5)

<u>PROPENSITY</u>	<u>HIGH SCHOOL GRADUATE</u>		<u>ROW TOTAL</u>
	<u>YES</u>	<u>NO</u>	
POSITIVE	904 (84.6) (48.9)	165 (15.4) (57.9)	1,069 (50.1)
NEGATIVE	964 (88.7) (51.5)	120 (11.3) (42.1)	1,066 (49.9)
COLUMN TOTAL	1,850 (86.7)	285 (13.3)	2,135 (100.0)

2. Controlling for Average or Above Average Performance
(E-6)

<u>PROPENSITY</u>	<u>HIGH SCHOOL GRADUATE</u>		<u>ROW TOTAL</u>
	<u>YES</u>	<u>NO</u>	
POSITIVE	44 (91.7) (56.6)	4 (8.3) (57.1)	48 (56.5)
NEGATIVE	34 (91.9) (43.6)	3 (8.1) (42.9)	37 (43.5)
COLUMN TOTAL	78 (91.8)	7 (8.2)	85 (100.0)

TABLE 15 (CONTINUED)

PROPENSITY BY HIGH
SCHOOL GRADUATE --
CONTROLLING FOR PERFORMANCE

3. Controlling for Average or Above Average Performance
(E-7)

<u>PROPENSITY</u>	<u>HIGH SCHOOL GRADUATE</u>		<u>ROW TOTAL</u>
	<u>YES</u>	<u>NO</u>	
POSITIVE	2 (100.0) (100.0)		2 (100.0)
NEGATIVE			
<hr/>			
COLUMN TOTAL	2 (100.0)		2 (100.0)

SOURCE: Derived from Youth Attitude Tracking Study data, 1976-1983 and Defense Manpower Data Center cohort files, 1976-1987.

accounts for possible differences in relationships due to particular paygrade by dividing the group by major paygrades. Refer back to Table 5 for a definition of average-or-above performance as required. The row total indicates that the total numbers of E-1s thru E-6s are almost identical for positive and negative propensity persons, at 1,069 and 1,066, respectively. The percentage accounts for possible differences in relationships due to particular paygrade by dividing the group by major paygrades. Refer back to Table 5 for a definition of average-or-above performance as required. The row total

indicates that the total numbers of E-1s thru E-6s are almost identical for positive and negative propensity persons, at 1,069 and 1,066, respectively. The percentage of high school graduates among the negative propensity group is 4.1 percentage points higher than that of the negative propensity group, 88.7 compared to 84.6 percent. Though the total numbers of individuals in the E-6 group are considerably small, the percentages within each group who graduated high school are almost identical for the positive and negative groups at 91.7 and 91.9 percent, respectively. Only two members make up the E-7 group and 100.0 percent are high school graduates with positive propensity.

Table 16 attempts to identify whether there is any distinction that might be made between propensity and AFQT category on the basis of having a documented good

performance record. Looking first at the group of E-1s through E-6s, it might be noted that 53.4 percent of the positive propensity recruits are AFQT Category IVA and below, compared with only 39.9 percent of the negative propensity people. This suggests that there may be a difference in the performance of an individual in these lower AFQT ranges on the basis of propensity -- in favor of positive propensity persons, since a noticeably higher proportion were able to remain in the military and do reasonable well. There is a similar pattern among the E-6s. The lower two AFQT categories comprise 54.4 percent of

TABLE 16

PROPENSITY BY AFQT CATEGORY
CONTROLLING FOR PERFORMANCE

COUNT
ROW PERCENT
COLUMN PERCENT

1. Average or Above Performance (E-1 Thru E-5)

<u>PROPENSITY</u>	<u>AFQT CATEGORY</u>					<u>ROW TOTAL</u>
	<u>CAT IVb & BELOW</u>	<u>CAT IVa</u>	<u>CAT IIIb</u>	<u>CAT IIIa</u>	<u>CAT I-II</u>	
POSITIVE	246 (23.5) (62.3)	313 (29.9) (54.7)	183 (17.5) (49.3)	259 (24.8) (42.7)	45 (4.3) (36.3)	1,022 (49.4)
NEGATIVE	149 (14.6) (37.7)	259 (25.3) (45.3)	188 (18.4) (50.7)	347 (34.0) (57.3)	79 (7.7) (63.7)	1,046 (50.6)
COLUMN TOTAL	395 (19.1)	572 (27.7)	371 (17.9)	606 (29.3)	124 (6.0)	2,068 (100.0)

2. Average or Above Performance (E-6)

<u>PROPENSITY</u>	<u>AFQT CATEGORY</u>					<u>ROW TOTAL</u>
	<u>CAT IVb & BELOW</u>	<u>CAT IVa</u>	<u>CAT IIIb</u>	<u>CAT IIIa</u>	<u>CAT I-II</u>	
POSITIVE	19 (42.2) (76.0)	12 (26.7) (63.2)	6 (13.3) (42.9)	6 (13.3) (35.3)	2 (4.4) (33.3)	45 (55.6)
NEGATIVE	6 (16.7) (24.0)	7 (19.4) (36.8)	8 (22.2) (57.1)	11 (30.6) (64.7)	4 (11.1) (66.7)	36 (44.4)
COLUMN TOTAL	25 (30.9)	19 (23.5)	14 (17.3)	17 (21.0)	6 (7.4)	81 (100.0)

TABLE 16 (CONTINUED)

PROPENSITY BY AFQT CATEGORY
CONTROLLING THE PERFORMANCE

3. Average or Above Performance (E-7)

<u>PROPENSITY</u>	<u>CAT IVb</u> <u>& BELOW</u>	<u>CAT</u> <u>IVa</u>	<u>CAT</u> <u>IIIb</u>	<u>CAT</u> <u>IIIa</u>	<u>CAT</u> <u>I-II</u>	<u>ROW</u> <u>TOTAL</u>
POSITIVE				2 (100.0) (100.0)		2 (100.0)
NEGATIVE						
COLUMN TOTAL				2 (100.0)		2 (100.0)

SOURCE: Derived from Youth Attitude Tracking Study data, 1976-1983 and Defense Manpower Data Center cohort files, 1976-1987.

the average-or-above performers, of which 70.5 percent are positive propensity. It is also observed that a clear majority in the E-6 group are in the upper AFQT categories, which would support a policy that is less lenient with individuals in the lower categories, given a demonstrated negative propensity.

Table 17 investigates the relationship between propensity and reenlistment, controlling for average or above-average performance. The totals in each of the three categories of good performers are relatively low. The E-1 through E-5 group does, however, have 106 members and the split of those choosing to reenlist is 54 to 52 in favor of the negative propensity group. The difference is just a

TABLE 17

PROPENSITY BY REENLISTMENT
CONTROLLING FOR PERFORMANCE

COUNT
COLUMN PERCENT

1. Average or Above Performance (E-1 thru E-5)

<u>PROPENSITY</u>	<u>REENLISTMENT</u>
POSITIVE	52 (49.1)
NEGATIVE	54 (50.9)
<hr/> COLUMN TOTAL	106

2. Average or Above Performance (E-6)

<u>PROPENSITY</u>	<u>REENLISTMENT</u>
POSITIVE	48 (57.1)
NEGATIVE	36 (42.9)
<hr/> COLUMN TOTAL	84

3. Average or Above Performance (E-7)

<u>PROPENSITY</u>	<u>REENLISTMENT</u>
POSITIVE	2 (100.0)
NEGATIVE	
<hr/> COLUMN TOTAL	<hr/> 2

SOURCE: Derived from Youth Attitude Tracking Study data, 1976-1983 and Defense Manpower Data Center cohort files, 1976-1987.

little more substantial among E-6s: 48 to 36 in favor of the positive propensity group. The two E-7s both reenlisted, which is understandable since most people require more than a first enlistment to reach that paygrade during peacetime. There does, however, appear to be a trend toward a more dominant representation of positive propensity persons in the career force, as evidence of time in service is introduced. In this case it is in the form of a much higher percentage of reenlistments among positive propensity E-6s and the only two E-7s came from the positive propensity group (though the number of cases are too small to permit generalization).

The final table from the analysis (Table 18) shows a couple of negative performance indicators, divided by branch of service. Attrition is defined as early release from the military, before the scheduled completion of the first term of enlistment. In the case of three of the services, the Air Force being the only exception, there were more attritions from the positive propensity group than from the negative propensity group. The differences in attrition rates between these two groups are rather substantial, with the positive propensity group consistently having more attritions. In the Air Force, there were slightly more attritions from the negative propensity group (51.0 percent) than from the positive propensity group (49.0 percent). In regard to bad discharges, the Marine Corps and the Navy have

TABLE 18

PROPENSITY BY SERVICE
OF ACCESSION
CONTROLLING FOR:

COUNT
 COLUMN PERCENT

1. <u>Attrition</u>					
<u>PROPENSITY</u>	<u>ARMY</u>	<u>NAVY</u>	<u>USMC</u>	<u>USAF</u>	<u>ROW TOTAL</u>
POSITIVE	313 (57.3)	140 (58.8)	81 (54.0)	99 (49.0)	633
NEGATIVE	233 (42.7)	98 (41.2)	69 (46.0)	103 (51.0)	503
<u>COLUMN TOTAL</u>	536	238	150	202	1,136

2. <u>Other Than Honorable or Dishonorable Discharge</u>					
<u>PROPENSITY</u>	<u>ARMY</u>	<u>NAVY</u>	<u>USMC</u>	<u>USMC</u>	<u>ROW TOTAL</u>
POSITIVE	37 (54.4)	44 (48.4)	23 (50.0)	10 (58.8)	114
NEGATIVE	31 (45.6)	47 (51.6)	23 (50.0)	7 (41.2)	108
<u>COLUMN TOTAL</u>	68	91	46	17	222

SOURCE: Derived from Youth Attitude Tracking Study data, 1976-1983 and Defense Manpower Data Center cohort files, 1976-1987.

half coming from each propensity group. The Army and the Air Force experience a slight difference in percentages (54.4 to 45.6 percent and 58.8 to 41.2 percent, respectively), with more discharges coming from the positive propensity group. Differences in character of discharge were also found among the Air Force groups, though the numbers were relatively small.

In summary, the results of this exploratory research effort shed some light on the relationship between stated intentions and subsequent actions. Very simple crosstabulations were used in the analysis to uncover some interesting relationships. Though inconclusive, at a minimum, these findings should stimulate some interest in the potential use of intention data, gathered through surveys such as YATS, in the study of manpower research issues.

V. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

1. From the Analysis

The following conclusions are based upon the analysis described in Chapter IV:

- The propensity of American youths to serve in the military has been very consistent, as measured by the Youth Attitude Tracking Study (YATS), from the period 1976 through 1983. (See Table 6.)
- The proportion of total accessions by survey year for each of the services has remained constant for more than a decade, with only minor deviations. This is perhaps easily explained by the need to adjust for losses and gains outside the forecasted range. (See Table 8.)
- The predictive power of the YATS propensity measure is greatly enhanced by the combined use of both the general and specific intention results from the survey. It is insufficient to use either as a "stand-alone" measure as is demonstrated when the two are used together. (Refer to Table 9 for further explanation.)
- There is a very weak relationship between the preferred branch of service indicated in the YATS survey and the service of accession. The strength of this relationship varies by service and, thus, should be accounted for when used in forecasting. (See Table 10.)
- Quality, using the traditional Armed Forces Qualification Test (AFQT) and the high school graduate criteria, appears to be independent of propensity. Differences in recruit quality between the positive and negative propensity groups are slightly higher for the negative propensity group. The selection bias resulting from typically higher enlistment standards for older applicants, who tend to come primarily from the negative propensity group, may be responsible for the apparent quality difference. (See Table 13.)

- Differences in the military performance of individuals cannot be explained by propensity alone. Propensity used along with the quality measures provides considerably more insight on prospective performance.
- Reenlistment rates for the two propensity groups are similar up to the four-to-five year (or E-4 to E-5 paygrade) level. Beyond this point, the decision to remain in the military appears to shift in favor of positive propensity. (See Table 17.)
- Negative performance measures (e.g., attrition and character of service) do not appear to be related to an individual's previously stated propensity to enlist. (See Table 18.)

2. General

The following conclusions are based on research involving intentions toward military service and the author's observations:

- The consistency with which the percentages of respondents to the YATS survey are classified as negative or positive propensity lends support to its use in manpower research. Additionally, the proportion of accessions by service from the analysis is comparable to the respective proportions of all Department of Defense (DOD) accessions using annual averages. These facts suggest that survey participants are very representative of the Qualified Military Available (QMA) population.
- If the survey results are truly representative of the population, the likelihood is much greater that a respondent has a negative propensity than a positive one (by approximately 3 to 1). (See chapter IV.) It is therefore not conducive to optimal utilization of limited and valuable manpower resources to exclude this large segment of the available market -- that is, persons indicating negative propensity -- in the establishment of recruitment goals. Available data support the position that the military ranks are being filled by a relatively small percentage of the available

market irrespective of propensity, and a significantly smaller proportion of the negative propensity segment. In numerical terms, however, there are many more people in the military who initially expressed a negative propensity on the YATS survey. There remains vast potential for making inroads into this relatively "untapped" market.

- Inclusion of an intention/propensity variable in a manpower forecasting model will enhance its effectiveness. The Marine Corps has taken the lead among the services in this area, as a propensity factor is included in its "Fairshare Quota Distribution" model. Two distinct propensity measures are provided by the YATS survey and there are a multitude of uses for the results. It is important to understand the interaction between the two propensity measures, as well as with other relevant variables (e.g., age, AFQT category, high school graduation, and so on) that represent demand constraints due to prevailing recruitment policies.
- Higher reenlistment rates are typically associated with positive propensity. Since the total number of reenlistments are restricted by numerous other "total force" considerations, it may be advantageous that this be the case. Recall that reenlistment rates in the upper paygrades tend to favor those with a positive propensity. It would thus, be conducive to a more stable and "careerist" force that more positive propensity persons are retained. Naturally, this is based on the assumption that there is no significant difference between the two groups, in terms of performance.
- The consistency of the data in terms of the demographic composition of the various services for the entire period of analysis further suggests that enlistments have been governed by demand constraints rather than by a limited supply of prospective enlistees. Data pertaining to recruiter contact are not included in the analysis because of many missing cases and major inconsistencies. However, less than 25.0 percent of the respondents indicate personal contact with a recruiter. To the extent that this is valid, it implies that recruiters could benefit substantially from more accurate market information.

B. RECOMMENDATIONS

The following actions are recommended as a result of this research:

- The Marine Corps is commended for its lead in using a propensity factor in its model for setting recruitment goals. It is recommended, however, that the YATS component in the propensity index be re-evaluated. It is imperative that the index encompass more than a single aspect of propensity. To employ the YATS measure solely as a probability based on positive propensity only is overly restrictive, and tends to understate the true recruitment market potential. An index is required that will more adequately account for potential recruits with negative propensity, the group typically representing the majority of new enlistments.
- Analysis of YATS survey data merged with accession data facilitates a more accurate evaluation of recruitment policies. For instance, the "special market" concept (discussed in chapter III) used in the "Fairshare Quota Distribution" can be evaluated within the scope of such an analysis. The results of this thesis indicate that such a concept is unwarranted strictly on the basis of being able to meet recruitment goals. The number of available Category I-IIIa's are likely sufficient to meet requirements within recruitment resource limitations. On the other hand, the study also suggests that the reasons for maintaining the "special market" approach may need to be re-examined with performance requirements in mind.

In summary, this thesis was undertaken as an exploratory effort with the objective of providing insight into the relationships between intentions to serve or not serve in the military and the ultimate enlistment decision. More specifically, the effort has focused on how Marine Corps enlistments are affected by propensity and whether there is significant evidence of a difference in performance based on

propensity. During the course of the research numerous questions emerged concerning the current use of the YATS propensity measure in the Marine Corps' recruitment forecast model. Most previous research of surveyed intentions for military service revolved around the use of such information in forecasting enlistments. The results of this analysis, though not conclusive, strongly suggest that there are a multitude of uses for the YATS data. The current effectiveness of forecasting methodology is greatly limited by the fact that it only uses the proportion of positive responses to the question on plans to serve in the Marine Corps. This procedure omits the larger number of positive responses for other services as well as all of the negative responses -- two major sources of recruits. It is believed that YATS survey data, given present-day limitations in estimating Qualified Military Available at the local level, can be of even greater value as an aid in decision-making for manpower planners and policymakers.

APPENDIX A

TABLE 1

PERCENT DISTRIBUTION AGE BY PROPENSITY (SERVICE SPECIFIC MEASURE)

COUNT		ROW PERCENT		COLUMN PERCENT	
AGE	DEFINITELY	PROBABLY	PROBABLY NOT	DEFINITELY NOT	ROW TOTAL
16	923 (5.5) (38.5)	5,163 (30.6) (33.9)	5,784 (34.3) (24.8)	4,979 (29.6) (18.4)	16,849 (24.7)
17	759 (4.7) (31.7)	4,237 (26.4) (27.8)	5,717 (35.6) (24.5)	5,348 (33.3) (19.7)	16,061 (23.6)
18	359 (3.0) (15.0)	2,464 (20.4) (16.2)	4,199 (34.8) (18.0)	5,055 (41.9) (18.6)	12,077 (17.7)
19	193 (2.0) (8.1)	1,573 (16.1) (10.3)	3,330 (34.2) (14.3)	4,653 (47.7) (17.2)	9,749 (14.3)
20	92 (1.2) (3.8)	1,094 (14.4) (7.2)	2,482 (32.7) (10.6)	3,918 (51.6) (14.4)	7,586 (8.5)
21	71 (1.2) (3.0)	709 (12.2) (4.7)	1,844 (31.8) (7.9)	3,168 (54.7) (11.7)	5,792 (8.5)
COLUMN TOTAL	2,397 (3.5)	15,240 (22.4)	23,356 (34.3)	27,121 (39.8)	68,114 (100.0)

MISSING CASES = 3,650

SOURCE: Derived from Youth Attitude Tracking Study data, 1976-1983.

APPENDIX A

TABLE 2

PERCENT DISTRIBUTION RACE BY PROPENSITY (SERVICE SPECIFIC MEASURE)

COUNT		ROW PERCENT		COLUMN PERCENT	
<u>RACE</u>	<u>DEFINITELY</u>	<u>PROBABLY</u>	<u>PROBABLY NOT</u>	<u>DEFINITELY NOT</u>	<u>ROW TOTAL</u>
WHITE	1,519 (2.8) (63.7)	10,872 (19.9) (71.9)	19,864 (36.3) (84.7)	22,405 (41.0) (82.1)	54,660 (80.1)
BLACK	633 (8.0) (26.6)	2,605 (32.9) (17.2)	1,939 (24.5) (8.3)	2,732 (34.5) (10.0)	7,909 (11.6)
OTHER	232 (4.1) (9.7)	1,639 (28.9) (10.8)	1,638 (28.9) (7.0)	2,163 (38.1) (7.9)	5,672 (8.3)
COLUMN TOTAL	2,384 (3.5)	15,116 (22.2)	23,441 (34.4)	27,300 (40.0)	68,241 (100.0)

MISSING CASES = 3,523

SOURCE: Derived from Youth Attitude Tracking Study data, 1976-1983.

APPENDIX A

TABLE 3

PERCENT DISTRIBUTION ATTENDING SCHOOL BY PROPENSITY (SERVICE SPECIFIC MEASURE)

ATTENDING SCHOOL	COUNT		PROBABLY		ROW TOTAL
	DEFINITELY	PROBABLY	NOT	DEFINITELY	
YES	1,855 (4.1) (77.1)	10,962 (24.2) (71.7)	15,872 (35.1) (67.1)	16,574 (36.6) (60.0)	45,262 (65.6)
NO	551 (2.3) (22.9)	4,332 (18.3) (28.3)	7,771 (32.8) (32.9)	11,029 (46.6) (40.0)	23,683 (34.4)
COLUMN TOTAL	2,406 (3.5)	15,294 (22.2)	23,642 (34.3)	27,603 (40.0)	68,945 (100.0)

MISSING CASES = 2,819

SOURCE: Derived from Youth Attitude Tracking Study data,
1976-1983.

APPENDIX A

TABLE 4

PERCENT DISTRIBUTION
CURRENT YEAR IN SCHOOL
BY PROPENSITY
(SPECIFIC SERVICE MEASURE)

COUNT ROW PERCENT COLUMN PERCENT					
CURRENT YEAR	<u>DEFINITELY</u>	<u>PROBABLY</u>	<u>PROBABLY NOT</u>	<u>DEFINITELY NOT</u>	<u>ROW TOTAL</u>
GRADES 10 - 12	1,020 (5.0) (94.4)	5,749 (28.2) (89.6)	7,026 (34.5) (77.2)	6,574 (32.3) (67.3)	20,369 (77.2)
1ST,2ND YR VOCATIONAL/ TRADE SCHOOL	16 (2.1) (1.4)	113 (.5) (1.8)	262 (33.7) (2.9)	387 (49.7) (4.0)	778 (3.0)
1ST,2ND YR 4 YR COLLEGE	35 (.8) (3.2)	443 (10.5) (6.9)	1,445 (34.3) (15.9)	2,284 (54.3) (23.4)	4,207 (16.0)
1ST,2ND YR JR/COMMUNITY COLLEGE	9 (.8) (.8)	110 (11.0) (1.7)	362 (36.1) (3.9)	520 (51.9) (5.3)	1,001 (3.8)
COLUMN TOTAL	1,080 (4.1)	6,415 (24.3)	9,095 (34.5)	9,765 (37.5)	26,355 (100.0)

MISSING CASES = 21,726

NOTE: Question only applicable for those who responded YES
to attending school question.

SOURCE: Derived from Youth Attitude Tracking Study data,
1976-1983.

APPENDIX A

TABLE 5

PERCENT DISTRIBUTION HIGH SCHOOL GRADUATE BY PROPENSITY (SERVICE SPECIFIC MEASURE)

COUNT		ROW PERCENT			ROW TOTAL
HIGH SCHOOL GRADUATE	DEFINITELY	PROBABLY	PROBABLY NOT	DEFINITELY NOT	
YES	247 (1.5) (49.2)	2,444 (14.5) (59.7)	5,735 (34.0) (77.2)	8,464 (50.1) (79.2)	16,890 (74.4)
NO	255 (4.4) (50.8)	1,650 (28.3) (40.3)	1,694 (29.1) (22.8)	2,222 (38.2) (20.8)	5,821 (25.6)
COLUMN	502 (2.2)	4,094 (18.0)	7,429 (32.7)	10,686 (47.1)	22,711 (100.0)

MISSING CASES = 3,791

NOTE: Question only applicable for those who responded NO to Attending School.

SOURCE: Derived from Youth Attitude Tracking Study data, 1976-1983.

APPENDIX A

TABLE 6

PERCENT DISTRIBUTION TYPE EDUCATION BY PROPENSITY (SPECIFIC SERVICE MEASURE)

COUNT
ROW PERCENT
COLUMN PERCENT

<u>TYPE</u> <u>EDUCATION</u>	<u>DEFINITELY</u>	<u>PROBABLY</u>	<u>PROBABLY</u> <u>NOT</u>	<u>DEFINITELY</u> <u>NOT</u>	<u>ROW</u> <u>TOTAL</u>
COLLEGE	819	5,443	11,785	14,031	32,078
PREP	(2.6)	(17.0)	(36.7)	(43.7)	(47.7)
	(35.1)	(36.7)	(50.9)	(52.1)	
COMMERCIAL/ BUSINESS	393	2,386	3,190	4,229	10,198
	(3.9)	(23.4)	(31.3)	(41.5)	(15.2)
	(16.8)	(16.1)	(13.8)	(15.7)	
VOCATIONAL	1,115	6,946	8,099	8,582	24,742
	(4.5)	(28.1)	(32.7)	(34.7)	(36.8)
	(47.7)	(46.8)	(35.0)	(31.9)	
DID NOT ATTEND SCHOOL	9	57	68	90	242
	(4.0)	(25.4)	(30.4)	(40.2)	(.3)
	(.4)	(.4)	(.3)	(.3)	
COLUMN TOTAL	2,336	14,832	23,142	26,932	67,242
	(3.5)	(22.0)	(34.4)	(40.1)	(100.0)

MISSING CASES = 4,522

SOURCE: Derived from Youth Attitude Tracking Study data,
1976-1983.

APPENDIX A

TABLE 7

PERCENT DISTRIBUTION FATHER'S EDUCATION BY PROPENSITY (SPECIFIC SERVICE MEASURE)

COUNT
ROW PERCENT
COLUMN PERCENT

<u>FATHER'S</u> <u>EDUCATION</u>	<u>DEFINITELY</u>	<u>PROBABLY</u>	<u>PROBABLY</u> <u>NOT</u>	<u>DEFINITELY</u> <u>NOT</u>	<u>ROW</u> <u>TOTAL</u>
DID NOT COMPLETE HIGH SCHOOL	667 (4.2) (31.3)	4,561 (29.0) (32.8)	4,986 (31.7) (23.1)	5,511 (35.0) (22.1)	15,725 (25.1)
FINISHED HIGH SCH OR EQUIVALENT	827 (3.5) (38.8)	5,367 (22.4) (38.6)	8,260 (34.5) (38.3)	9,484 (39.6) (38.0)	23,938 (15.2)
SOME COLLEGE COMPLETED	250 (3.2) (11.7)	1,476 (18.7) (10.6)	2,822 (35.7) (13.1)	3,360 (42.5) (13.4)	7,908 (12.6)
FINISHED COLLEGE	238 (2.6) (11.2)	1,594 (17.3) (11.5)	3,376 (36.6) (15.7)	4,012 (43.5) (16.1)	9,220 (14.7)
GRAD/PROF DEGREE COMPLETED	149 (2.6) (7.0)	900 (15.6) (6.5)	2,109 (36.5) (9.8)	2,622 (45.4) (10.5)	5,780 (9.2)
COLUMN TOTAL	2,131 (3.4)	13,898 (22.2)	21,553 (34.4)	24,989 (40.0)	62,571 (100.0)

MISSING CASES = 9,192

SOURCE: Derived from Youth Attitude Tracking Study data,
1976-1983.

APPENDIX A

TABLE 8

PERCENT DISTRIBUTION
LOOKING FOR JOB
BY PROPENSITY
(SPECIFIC SERVICE MEASURE)

COUNT
ROW PERCENT
COLUMN PERCENT

<u>LOOKING FOR JOB</u>	<u>DEFINITELY</u>	<u>PROBABLY</u>	<u>PROBABLY NOT</u>	<u>DEFINITELY NOT</u>	<u>ROW TOTAL</u>
YES	892 (5.5) (70.5)	4,963 (30.4) (70.2)	5,157 (31.6) (57.1)	5,320 (32.6) (52.3)	16,332 (59.4)
NO	373 (3.3) (29.5)	2,109 (18.9) (29.8)	3,879 (34.8) (42.9)	4,798 (43.0) (15.7)	11,159 (40.6)
COLUM TOTAL	1,265 (4.6)	7,072 (25.7)	9,036 (32.9)	10,118 (36.8)	27,491 (100.0)

MISSING CASES = 38,942

SOURCE: Derived from Youth Attitude Tracking Study data,
1976-1983.

APPENDIX A

TABLE 9

PERCENT DISTRIBUTION FUTURE PLANS FOR SCHOOL BY PROPENSITY (SPECIFIC SERVICE MEASURE)

COUNT
ROW PERCENT
COLUMN PERCENT

<u>PLANS FOR</u> <u>SCHOOL</u>	<u>DEFINITELY</u>	<u>PROBABLY</u>	<u>PROBABLY</u> <u>NOT</u>	<u>DEFINITELY</u> <u>NOT</u>	<u>ROW</u> <u>TOTAL</u>
YES	724 (2.4) (45.2)	6,146 (20.4) (60.6)	10,945 (36.4) (68.8)	12,251 (40.7) (65.5)	30,066 (64.9)
NO	878 (5.4) (54.8)	3,988 (24.5) (39.4)	4,963 (30.5) (31.2)	6,456 (39.6) (34.5)	16,285 (35.1)
COLUMN TOTAL	1,602 (3.5)	10,134 (21.9)	15,908 (34.3)	18,707 (40.3)	46,351 (100.0)

MISSING CASES = 4,522

NOTE: This question applicable only for Survey Years
1978-1983.

SOURCE: Derived from Youth Attitude Tracking Study data,
1976-1983.

APPENDIX A

TABLE 10

PERCENT DISTRIBUTION FUTURE PLANS FOR MILITARY BY PROPENSITY (SPECIFIC SERVICE MEASURE)

COUNT
ROW PERCENT
COLUMN PERCENT

<u>PLANS FOR</u> <u>MILITARY</u>	<u>DEFINITELY</u>	<u>PROBABLY</u>	<u>PROBABLY</u> <u>NOT</u>	<u>DEFINITELY</u> <u>NOT</u>	<u>ROW</u> <u>TOTAL</u>
YES	1,111 (35.4) (66.5)	1,823 (58.1) (19.8)	159 (5.1) (1.2)	43 (1.4) (.2)	3,136 (7.7)
NO	559 (1.5) (33.5)	7,400 (19.7) (80.2)	13,443 (35.8) (98.8)	16,159 (43.0) (99.8)	37,561 (92.3)
COLUMN TOTAL	1,670 (4.1)	9,223 (22.7)	13,602 (33.2)	16,202 (39.8)	40,697 (100.0)

MISSING CASES = 12,432

NOTE: This question applicable only for Survey Years
1978-1983.

SOURCE: Derived from Youth Attitude Tracking Study data,
1976-1983.

APPENDIX A

TABLE 11

PERCENT DISTRIBUTION BRANCH OF SERVICE BY PROPENSITY (SPECIFIC SERVICE MEASURE)

COUNT
ROW PERCENT
COLUMN PERCENT

<u>BRANCH OF SERVICE</u>	<u>DEFINITELY</u>	<u>PROBABLY</u>	<u>PROBABLY NOT</u>	<u>DEFINITELY NOT</u>	<u>ROW TOTAL</u>
ARMY	396 (35.4) (36.4)	656 (58.6) (37.7)	51 (4.6) (34.0)	16 (1.4) (41.0)	1,119 (37.1)
NAVY	311 (36.8) (28.6)	477 (56.4) (27.4)	48 (5.7) (32.0)	9 (1.1) (23.0)	845 (28.0)
AIR FORCE	37 (33.9) (3.4)	62 (56.9) (3.6)	9 (8.3) (6.0)	1 (.9) (2.6)	109 (3.6)
MARINE CORPS	143 (36.9) (13.2)	226 (58.2) (13.0)	12 (3.1) (8.0)	7 (1.8) (17.9)	388 (12.9)
COAST GUARD	200 (35.9) (18.4)	321 (57.6) (18.4)	30 (5.4) (2.0)	6 (1.1) (15.4)	557 (18.4)
COLUMN TOTAL	1,087 (36.0)	1,742 (57.7)	150 (5.0)	39 (1.3)	3,018 (100.0)

MISSING CASES = 4,522

NOTE: This question applicable only if Future Plans for Military is YES.

SOURCE: Derived from Youth Attitude Tracking Study data, 1976-1983.

LIST OF REFERENCES

1. Cooper, Richard V. L., Military Manpower and the All-Volunteer Force, R-1450-ARPA (Santa Monica, CA: Rand, Sept 1977), p. 269.
2. Jules I. Borack, A Framework For Integrating Alternative Military Manpower Supply Methods (Navy Personnel Research and Development Center, San Diego, CA, May 1984), p. 4.
2. B. R. Orvis, Forecasting Enlistment Actions from Intention Information: Validity and Improvement, Note 1954-MRAL (Santa Monica, CA: Rand Corporation, December 1982).
3. Jerald G. Bachman, Lee Sigelman, and Greg Diamond, "Self-Selection, Socialization, And Distinctive Military Values: Attitudes of High School Seniors," Armed Forces & Society, Vol. 13 No. 2, Winter 1987, Inter-University Seminar on Armed Forces and Society.
4. Headquarters, Marine Corps, "FY88 Fairshare Quota Distribution," Undated.
5. Martin Binkin and John D. Johnston, All-Volunteer Armed Forces, Report Prepared for the Committee on Armed Services, United States Senate, 93rd Cong., 1st Sess., (Washington, D.C.: Government Printing Office, June 1973), pp. 40-41, 59-60.
6. Mark J. Eitelberg, American Demographic Trends and National Security: Issues for the 21st Century, Paper Prepared for the Global Demographic Trends and National Security Project of the Bipartisan Commission on Integrated Long-Term Strategy, (Naval Postgraduate School, Monterey, CA), July 1987.
7. Research Triangle Institute, Youth Attitude Tracking Study II, Raleigh, N.C., Fall 1986, pp. 1-15.
8. Jules Borack, Erwin Curtis, and Stephen Wax, Estimating the Youth Population Qualified for Military Service (Navy Personnel Research and Development Center, San Diego, CA, August 1987).
9. Memorandum for Director, Personnel Procurement, Center for Naval Analyses, 9 December 1987.

10. Research Triangle Institute, Youth Attitude Tracking Study II, Raleigh, N.C., Fall 1986.
11. James N. Dertouzos, Recruiter Incentives and Enlistment Supply, R-3065-MIL (Santa Monica, CA: Rand, May 1985), p. 6.
12. Memorandum for Director, Personnel Procurement, Center for Naval Analyses, 9 December 1987.

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